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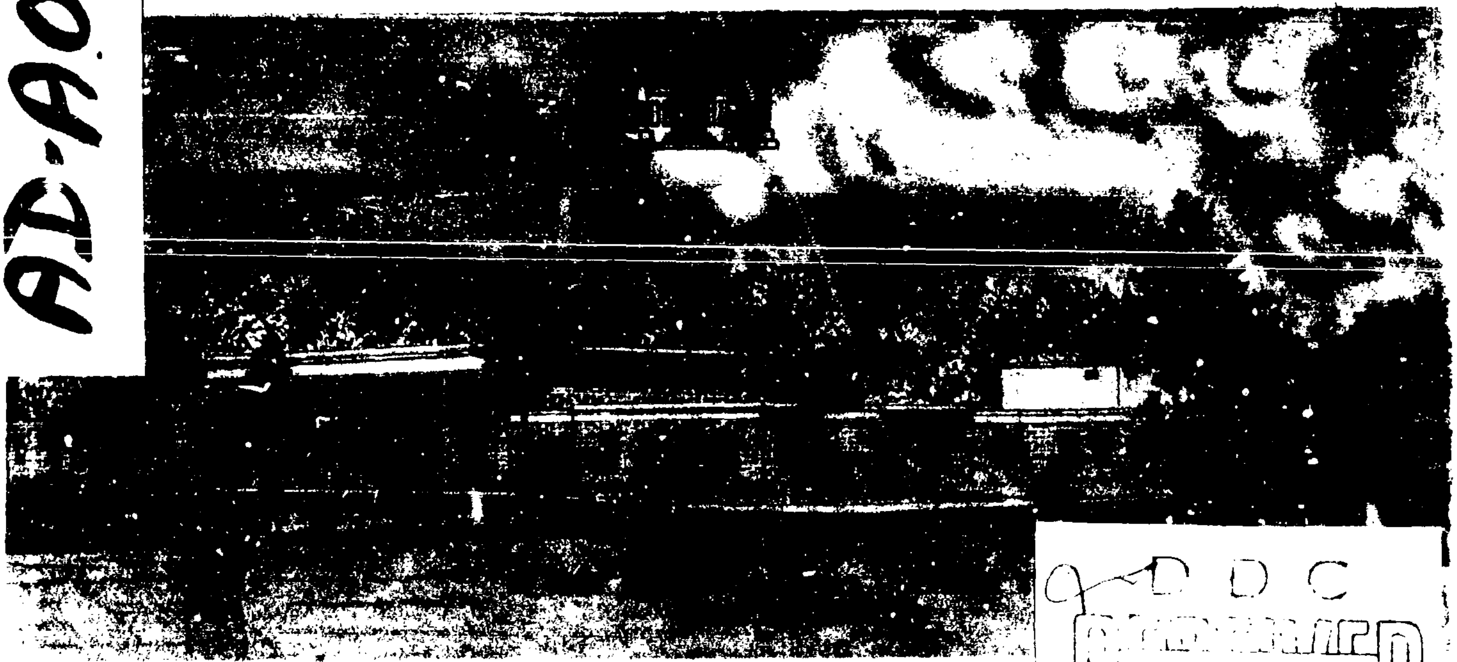
TECHNICAL REPORT M-70-4

RELATIVE OFF-ROAD MOBILITY PERFORMANCE OF SIX WHEELED AND FOUR TRACKED VEHICLES IN SELECTED TERRAIN

by

J. K. Stoll, D. D. Randolph, A. A. Rula



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FOREWORD

This report is a consolidation of three draft reports submitted in 1967 and 1968 to the U. S. Army Tank-Automotive Command in connection with a cost-effectiveness study authorized by the U. S. Army Materiel Command. The study herein was performed at the U. S. Army Engineer Waterways Experiment Station (WES) in April-May 1967, September-October 1967, and May-June 1968 by personnel of the Obstacle-Vehicle Studies Section, Mobility and Environmental Division. General supervision was provided by Messrs. W. J. Turnbull, W. G. Shockley, A. A. Rula, and J. K. Stoll. The report was prepared by Messrs. Stoll, Rula, and D. D. Randolph.

Acknowledgment is made for vehicle data provided by the U. S. Army Tank-Automotive Command; Office, Chief of Engineers; U. S. Army Ordnance Corps; Military Research and Development Center, Thailand; Pacific Car and Foundry; and Aberdeen Proving Ground.

COL John R. Oswalt, Jr., CE, and COL Levi A. Brown, CE, were Directors of WES during the conduct of this study and preparation of this report. Mr. J. B. Tiffany and Mr. F. R. Brown were Technical Directors.

CONTENTS

CONVERSION FACTORS, BRITISH TO METRIC UNITS OF MEASUREMENT

British units of measurement used in this report can be converted to metric units as follows:

Multiply	By	To Obtain
inches	2.54	centimeters
square inches	6.4516	square centimeters
feet	0.3048	meters
cubic feet	0.0283168	cubic meters
pounds	0.45359237	kilograms
pounds per square inch	0.070307	kilograms per square centimeter
pounds per cubic foot	16.0185	kilograms per cubic meter
tons	907.185	kilograms
miles	1.609344	kilometers
miles per hour	1.609344	kilometers per hour
square miles	2.58999	square kilometers

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SUMMARY

The U. S. Army Engineer Waterways Experiment Station analytical model for predicting off-road ground mobility was used to evaluate the performance of six wheeled vehicles (M656, M54A2, M520, M37B1, M561, and M706) and four tracked vehicles (M548, M113A1, M116, and M571) over a selected traverse in Thailand. Maps were prepared to exhibit the terrain in terms of surface composition (soil consistency), surface geometry (slopes, rice-field dikes, etc.), vegetation, and hydrologic geometry (rivers and streams). The performance of each vehicle was evaluated in terms of average speed over the traverse and the center line, average fuel consumed over the traverse, and center-line cargo delivery rate.

The vehicles were "run" over the traverse under dry-season conditions (60 or 40 rating cone index) and wet-season conditions (60 or 35 rating cone index). Four of the vehicles (M656, M54A2, M520, and M548) were tested also under wet-season conditions of 60 or 40 rating cone index. Wet-season conditions usually reduced vehicle performance. However, soil strength was not as significant as other terrain factors in evaluating the vehicles over the selected traverse because the soil strengths used were higher than the vehicle cone indexes of all the vehicles; so no vehicles were immobilized because of soft soils.

No one vehicle provided optimum mobility for all the terrain conditions encountered on the traverse over which predictions were made. Further, neither wheels nor tracks appeared to consistently give better performance. The M113A1 had the highest average traverse and center-line speeds in the dry season, and the M571 had the highest speeds in the wet. The M54A2 had the lowest traverse and center-line speeds in both seasons. The M571 consumed less fuel on the average in the dry season, and the M561 and M571 consumed the least in the wet. The M548 consumed the most in the dry season and the 60 or 40 rating cone index wet season; the M520 the most in the 60 or 35 rating cone index wet season. The M520 had the highest delivery rate in both seasons and the M37B1 the lowest.

A recommendation was made that the mission environment for any new vehicle be defined in quantitative terms before the new vehicle is developed.

Appendix A describes the WES analytical model in an abbreviated form; Appendix B, the evaluation of the dynamic response of the M706; and Appendix C, some additional general analyses of the effects of soil strength on vehicle performance.

RELATIVE OFF-ROAD MOBILITY PERFORMANCE OF SIX WHEELED AND FOUR TRACKED VEHICLES IN SELECTED TERRAIN

PART I: INTRODUCTION

Background

1. In November 1966, responsibility was delegated by the U. S. Army Materiel Command (AMC) to the U. S. Army Tank-Automotive Command (TACOM) to conduct a cost-effectiveness study for the Department of the Army (DA), in which the performance of the new M656 truck was to be compared with the performance of selected standard vehicles. Following a limited 17-day study by TACOM, in which a terrain model was used, DA requested further investigation and suggested the use of the more sophisticated Waterways Experiment Station (WES) analytical model for predicting off-road ground mobility performance.

2. In April 1967, the WES undertook the requested study and reported its findings to TACOM in May 1967 in a draft report entitled "Relative Off-Road Mobility Performance of the M656, M54A2, M520, and M548 in Selected Terrain." This WES report was made a part of the TACOM final report entitled "Cost/Performance Analysis of the M656, M520, M54A2, and M548 Vehicles."

3. In September 1967, the Materiel Studies Review Committee met at AMC to review the TACOM final report. As a result of that review, the WES was asked to perform an analysis of the effects of wet-season conditions on vehicle performance. The results of that analysis were submitted to TACOM in October 1967 in a supplement to the first WES report. The supplement was titled "Relative Off-Road Mobility Performance of the M656, M54A2, M520, and M548 in Selected Terrain; Supplement No. 1, Evaluation of Vehicles in the Wet Season."

4. The study by WES was later extended to cover an additional group of vehicles, and a draft report was submitted to TACOM in June 1968. That report was titled "Relative Off-Road Mobility Performance of the M113A1, M571, M116, M561, M706, and M37B1 in a Selected Terrain."

5. The same analytical model, the same terrain, and basically the same evaluation procedures were used throughout the WES investigations. This report, then, is a consolidation of the information contained in the three draft reports submitted to TACOM and named in the preceding paragraphs.

Purpose

6. The purpose of this study was to evaluate by use of the WES analytical model the relative off-road mobility performances over a selected route of 10 vehicles, 6 wheeled and 4 tracked, in terms of average speed (mph),* fuel consumption (gal/miles), and cargo delivery rate (ton-miles/hr).

Scope

7. The scope of the study was governed by the AMC work directive, availability of terrain and vehicle data in a form amenable to computer usage, restrictions imposed by time deadlines, and limitations of the analytical model. The model is described in detail in a report now in preparation[1] and in an abbreviated form in Appendix A. Specific conditions pertaining to the study are discussed in the following paragraphs.

Terrain data

8. The performances of the vehicles were analyzed over one strip of Thailand terrain for which data were already compiled[2] and ready for immediate input to the WES computer. The analyses included the effects of soil strength, vegetation, surface geometry, and hydrologic geometry on vehicle performance. The effects of vegetation in obscuring driver vision and subsequent effect on vehicle speed were not evaluated.

9. Average soil strength values for the dry season and the wet (high-moisture condition) season were used.

Vehicle data

10. The following vehicles were included in the study:

* A table of factors for converting British units of measurement to metric units is presented on page vii.

Wheeled	Tracked
M656, truck, cargo, 5-ton, 8x8	M548, carrier, cargo, 6-ton
M54A2, truck, cargo, 5-ton, 6x6	M113A1, carrier, personnel, full-tracked, armored
M520, truck, cargo, 8-ton, 4x4 (GOER)	M116, carrier, cargo, amphibious, 1-1/2-ton
M37B1, truck, cargo, 3/4-ton, 4x4	M571, carrier, utility, articulated, full-tracked, 1-ton
M561, truck, cargo, 1-1/2-ton, 6x6	
M706, car, armored, light, 4x4	

11. The evaluation considered the use of winches, where needed, for all vehicles except the M113A1, which was assumed to be equipped with capstans and anchors of the type being used for self-recovery of this vehicle in South Vietnam. Pitch articulation of the M561 and yaw and pitch articulation of the M571 were considered in their evaluations. The wheeled vehicles were evaluated at a selected tire deflection of 25 percent. Since no test data were available pertinent to the ability of the M706 to cross vertical obstacles, the use of vehicle dynamics modeling techniques was necessary in computing the performance limits of this vehicle.

12. The effects of special vehicle characteristics such as duck walking and positive traction were not included in the study because appropriate quantitative relations were not available. Qualitative statements, however, are included to explain advantages to be gained from these characteristics.

13. Comparative performance values were obtained from selected traverses of straight-line segments of terrain that permitted each vehicle to travel at its highest rate of speed. An upper-limit speed of 40 mph was imposed on all vehicles.

Definitions

14. Certain special terms used in this study are defined as follows:

Soil terms

Cone index (CI). An index of the shearing resistance of soil obtained with a cone penetrometer.

Remolding index (RI). A ratio that expresses the change of strength that may occur under the traffic of a vehicle.

Rating cone index (RCI). The product of the measured cone index and the remolding index for the same layer of soil.

Terrain terms

Terrain factor. A specific attribute of the terrain that can be adequately described by a single quantitative description, e.g. slope.

Terrain factor value. A quantity defining a specific point on the scale of all possible values of a terrain factor, e. g. a 5-degree slope

Terrain factor class. A category within the total range of values exhibited by a terrain factor, defined in terms of a specific range of factor values, e. g. slope class 1, 0 to 1.5 degrees.

Terrain factor family. A group of related terrain factors that either alone or in concert tend to produce a characteristic effect on vehicle performance, e. g. slope, obstacle spacing, terrain approach angle, and step height.

Areal terrain factor complex. An areal unit throughout which a specific assemblage of factor classes occurs.

Linear terrain factor complex. An elongated unit throughout which a specific assemblage of factor classes occurs.

Surface geometry. The three-dimensional configuration of the surface on which ground-contact vehicles operate.

Macrogeometry feature. A smooth, sloping surface whose area is greater than the contact surface of the vehicle operating thereon.

Microgeometry feature. A surface whose area is less than the contact surface of the vehicle operating thereon.

Vehicle contact surface. The surface generated by a plane passing through the points of contact between the vehicle and the surface on which it is resting.

Terrain approach angle. The acute angle formed by the intersection of two ground surface planes (see sketch, page 5).

Hydrologic features. Streams, lakes, and other water bodies with water depths greater than 3 ft.

Vehicle-soil system terms

Tractive force (T_f). The total thrust developed by the vehicle's traction elements in propelling a vehicle on a level, smooth surface.

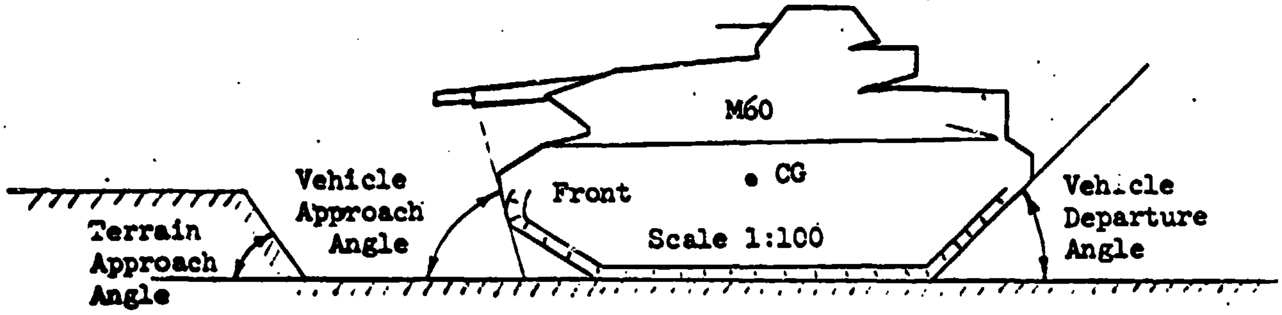
Propelling force (P_f). The sum of all forces acting to propel the vehicle.

Motion resistance. The force required to tow a vehicle under given conditions.

Maximum drawbar pull. The largest sustained towing force produced by a self-propelled vehicle at its drawbar under given conditions.

Slip. The percentage of wheel or track movement ineffective in thrusting a vehicle forward.

Vehicle approach angle. The acute angle formed by a line drawn tangent to the vehicle traction components and a line tangent to the leading edge of the vehicle and the leading edge of the front traction component (see sketch below).



Vehicle departure angle. The acute angle formed by a line drawn tangent to the vehicle traction components and a line tangent to the trailing edge of the vehicle and the trailing edge of the traction component (see sketch above).

Vehicle cone index (VCI). The minimum rating cone index (RCI) that will permit a vehicle to complete a specified number of passes; thus, VCI_{50} means the minimum RCI necessary to complete 50 passes, and VCI_1 means the minimum RCI necessary to complete one pass.

Mobility index (MI). A dimensionless number that results from a consideration of certain vehicle characteristics.

PART II: TERRAIN AND PERFORMANCE EVALUATION DATA USED IN THE STUDY

The Computer Program

Early phases of the study

15. In general, the procedures discussed in Appendix A of this report were followed in predicting cross-country performance of the four vehicles evaluated in the early phases of the study; however, some exceptions were necessary because certain data were lacking.

16. A computer was used to make the computations and approximations necessary to predict the average tractive force requirement, average speed, and fuel consumption for each vehicle in each areal terrain unit. The computer program consisted of 11 overlays stored on magnetic tape; they are called and executed as required to produce the desired output for a given set of terrain and vehicle data. Data from one overlay needed to perform the computations on the next are retained in memory storage for all 11 overlays. Total size of the program is approximately 35,000 words. At the time of the early phases of the study, the computer program did not include overlays for predicting vehicle performance in hydrologic geometry features or in rice fields. Neither were overlays available for predicting performance as related to the effects of vegetation obscuration on the driver's vision or obstacle-vehicle geometry interference and maximum tractive force required in crossing microgeometry features. The effects of these elements on vehicle performance were determined graphically or mathematically and integrated with the results of the computer program.

Later phases

17. Computer programs were prepared to predict vehicle performance in rice fields and to estimate fuel consumption. These programs were used in conjunction with the basic program used in the early phases of the study.

Terrain Data

18. Because time for this study was limited, an area around Khon Kaen,

Thailand (fig. 1), for which terrain data were immediately available, was selected for the vehicle evaluations. The specific route is designated as Route 1 in plate 1. (Instructions for preparing a map of this type are given in WES Technical Report No. 3-726[3].) The route was a strip approximately 40 miles long and 1 mile wide. Aerial views of segments, at a scale of 1:15,000, are shown in figs. 2-7; the locations shown in these photographs are identified in plate 2.

19. The area in which Route 1 is located is classified as tropical savanna and has a very pronounced seasonal distribution of rainfall. The rainy season coincides with the southwest monsoon which occurs between May and October and accounts for about 85 percent of the yearly rainfall. The typhoons of the South China seas that pass over the area normally combine with the southwest monsoon in producing torrential rains. The long-term yearly average rainfall is 42.1 in. The humidity is highest during the rainy season; the yearly average is about 71.1 percent. The yearly average temperature is approximately 26.5 C., with April the warmest month (30 C.).

Physiography and soils

20. The geomorphologic features of Route 1 are determined mainly by the tremendous alluvial deposits of the Mekong River and its tributaries. Several well-separated phases of sedimentation and their associated cycles of erosion can be recognized throughout this complex system, such as alluvial plains, low terraces, middle terraces, and high terraces.

21. The main features of the alluvial plains are the rather prominent natural levees and basins or backswamps. Sediments are mainly clayey, but lighter-textured materials are found on the levees. Narrow valleys of creeks and drainageways have no natural levees, and the recent alluvial sediments are mostly lighter in texture and are usually similar to the sandy materials widespread in the adjacent areas. The low terraces are relatively higher than the alluvial plains. In slightly higher parts, the low terraces are composed mainly of medium- to light-textured sediments; in the lower parts, medium- to heavy-textured deposits dominate the surface layers.

22. The middle terrace formations are of undulating to rolling relief with diverse formations that differ from those of the low terraces

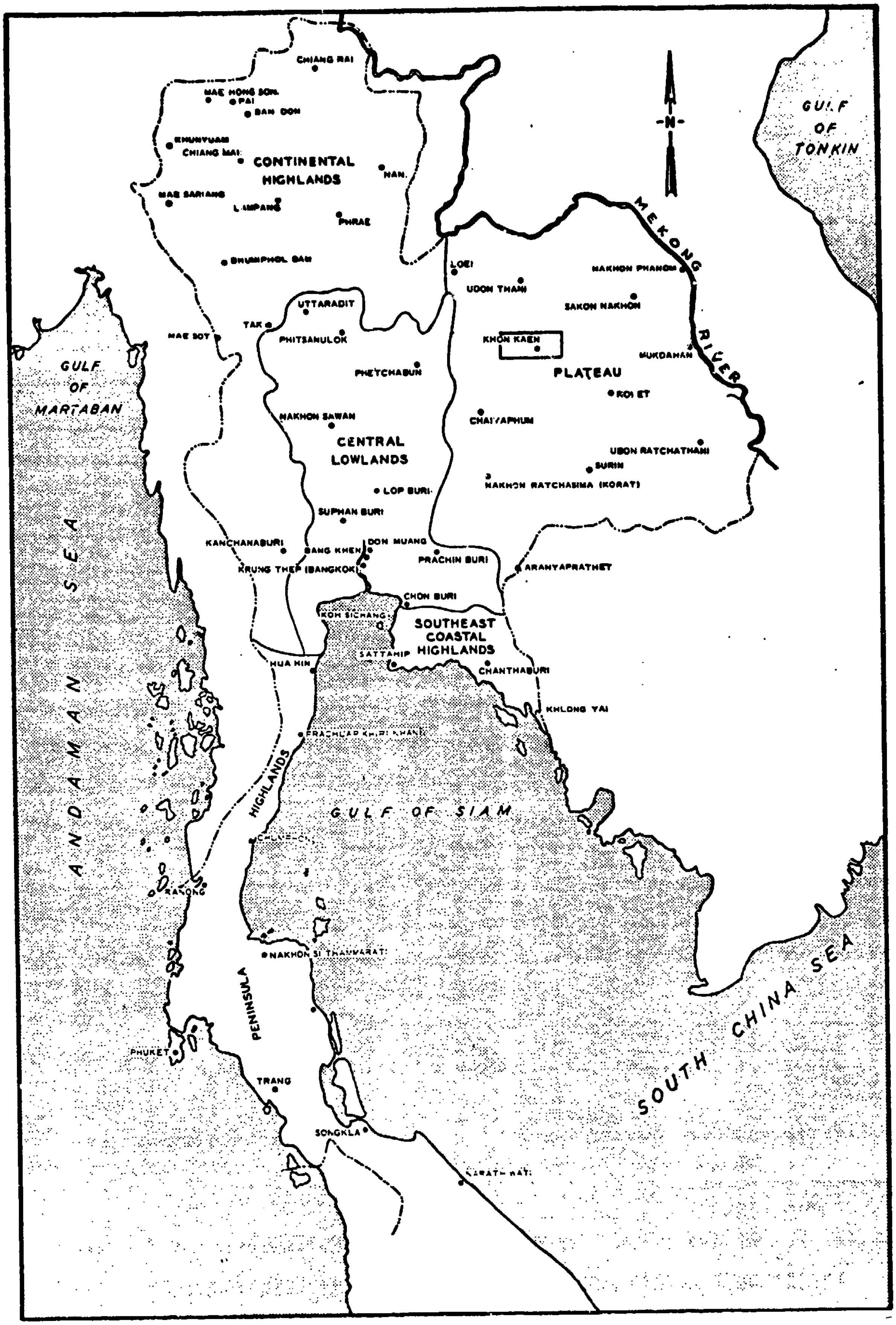


Fig. 1. Location of selected terrain (Khon Kaen)

Fig. 2. Aerial photograph of segment of Route 1;
Position on route is shown in plate 2, area 1.

Fig. 3. Aerial photograph of segment of Route 1;
Position on route is shown in plate 2, area 2

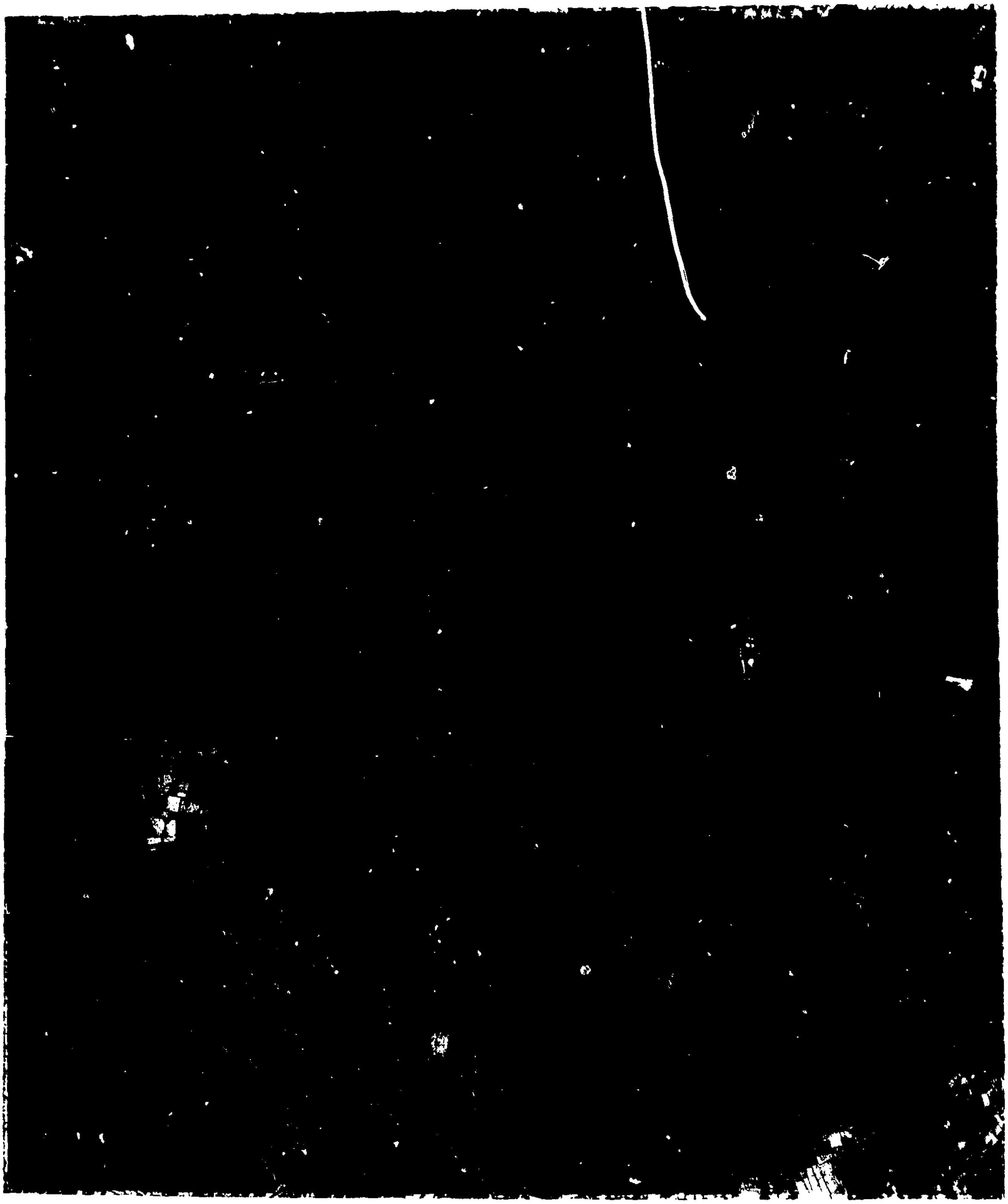


Fig. 4. Aerial photograph of segement of Route 1;
Position on route is shown in plate 2, area 3.

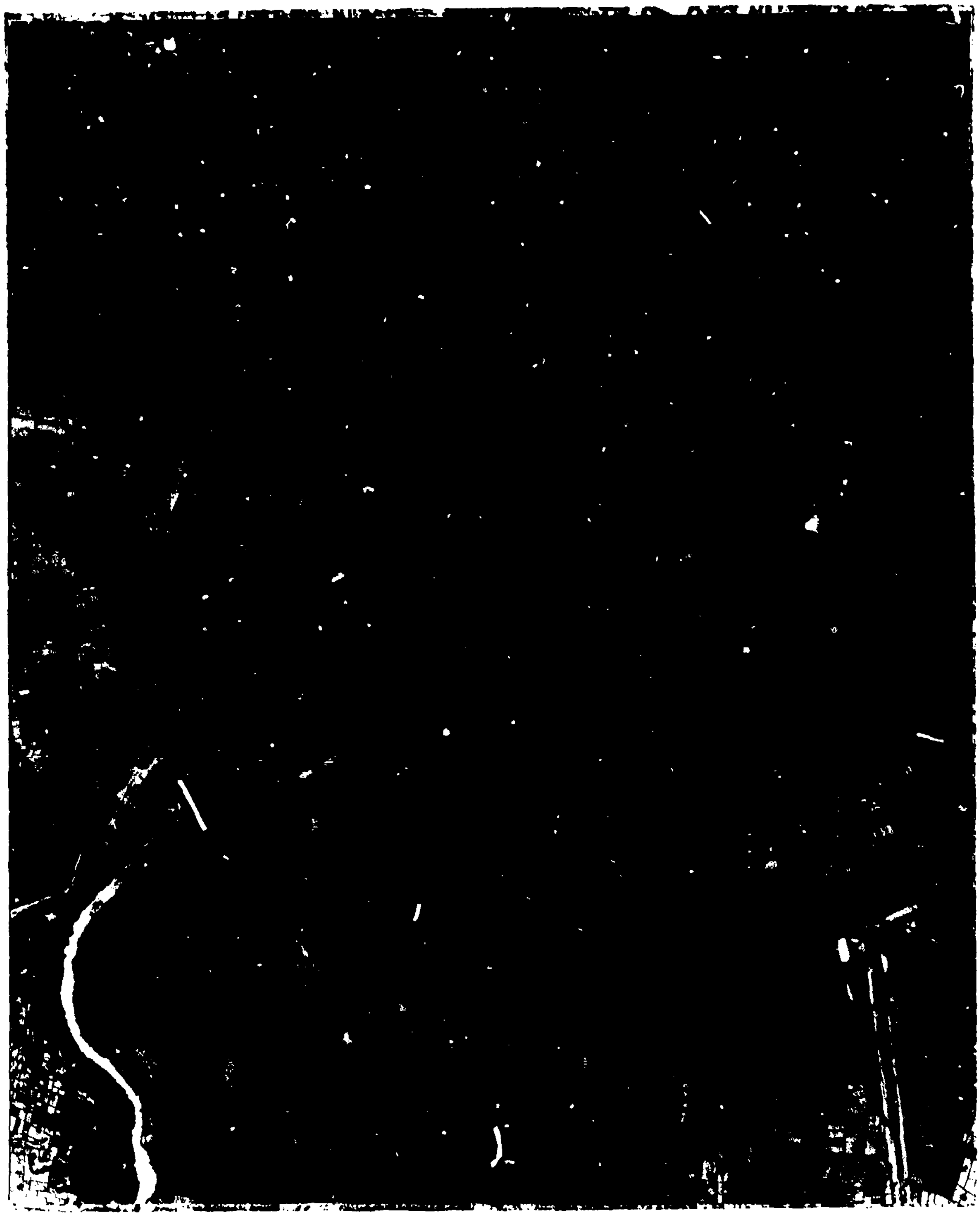


Fig. 5. Aerial photograph of segment of Route 1;
Position on route is shown in plate 2, area 4.

Fig. 6. Aerial photograph of segment of Route 1;
Position on route is shown in plate 2, area 5.

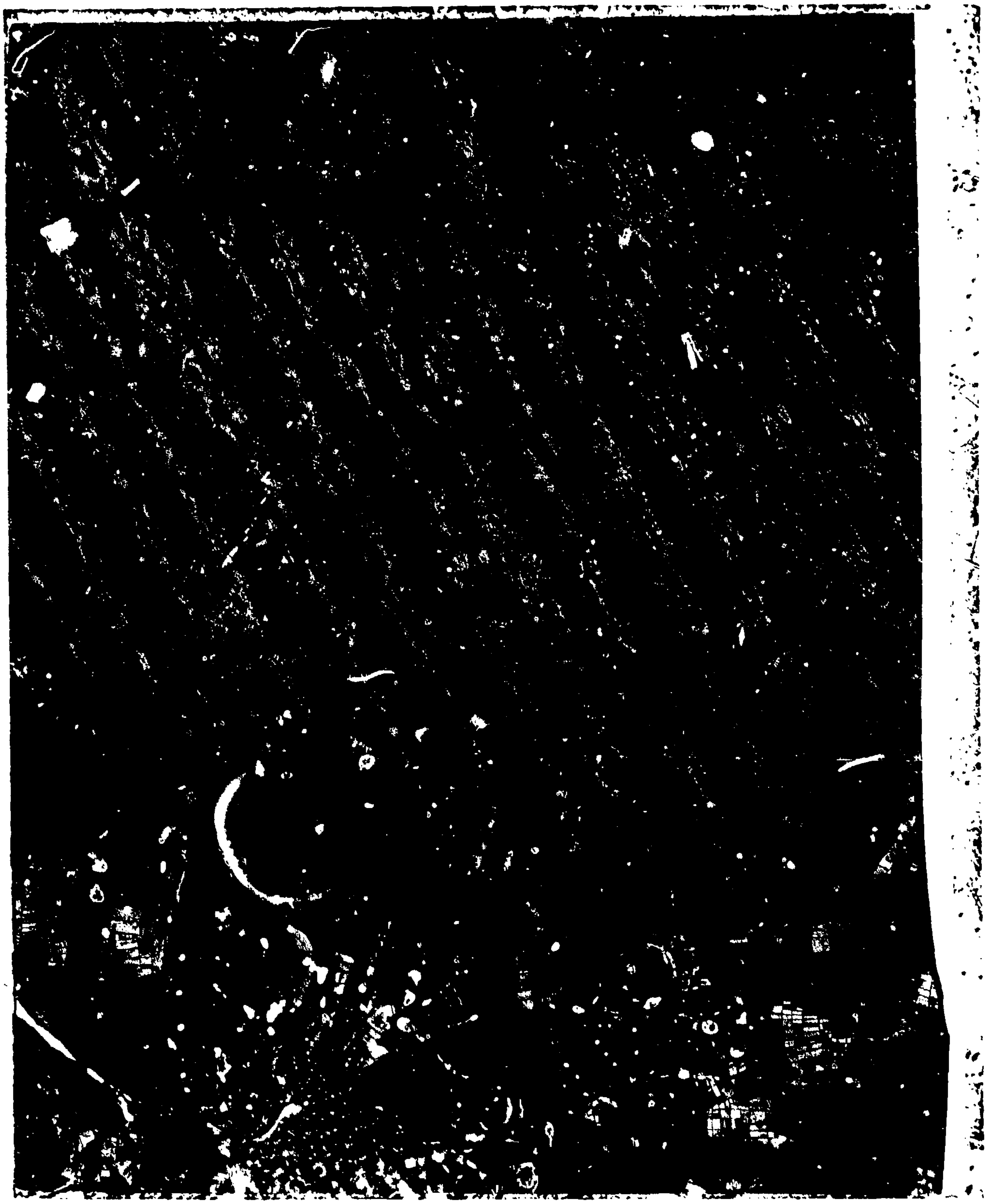


Fig. 7. Aerial Photograph of Segment of Route 1;
Position on route is shown in plate 2, area 6.

and the alluvial plains. They show two distinctly different kinds of sediments in the geological succession, clayey lower strata and sandy upper ones. Only small areas of high terrace formations occur. Erosion through the years has left small islands higher than and surrounded by the younger terrace formations, one of which is along the route near Khon Kaen. The material of the islands is generally red sandy clay.

Vegetation and land use

23. The natural vegetation in the areas included in Route 1 is classified as dry monsoon forest, consisting of trees, shrubs, bamboo, and grasses. Weeds are widespread throughout the area except in very dry, sandy parts. In the plains and on terrace formations, trees in forest stands are generally small and sparse; however, isolated areas of large trees closely spaced may be found. In low spots, marshy vegetation is normally found. Shifting cultivation is common in the area. Kenaf, a plant cultivated for its fiber, is grown everwhere except in the lower land, which is used mainly for rice cultivation. The areas in and around villages are normally used for garden crops.

Hydrologic features

24. The main rivers in the area of Route 1 contain water the year around. River valleys are broad, with a relatively high ground water level. Gradients of the rivers are extremely low, and extensive flooding occurs in the lowlands in the rainy season. Many creeks are intermittent.

Terrain types

25. Ground-level views of several terrain types are shown in figs. 8-11. Terrain-factor maps for the area in which the route was selected had been prepared for another study.[2] The area mapped was approximately 40 miles long and 11 miles wide. Mapping classes were established from 80 soil consistency samples, 300 surface geometry samples, 76 vegetation samples, and 133 hydrologic geometry samples. Wet-season conditions produced a difference in two terrain factors--soil strength and stream stages; thus both "areal" and "linear" terrain-type maps prepared for the dry season (plates 1 and 2) were revised to reflect seasonal differences (plates 3 and 4). None of the areal terrain types appearing on the dry-season map (plate 1) was entirely eliminated by the revisions made for the wet-season condition (plate 3).

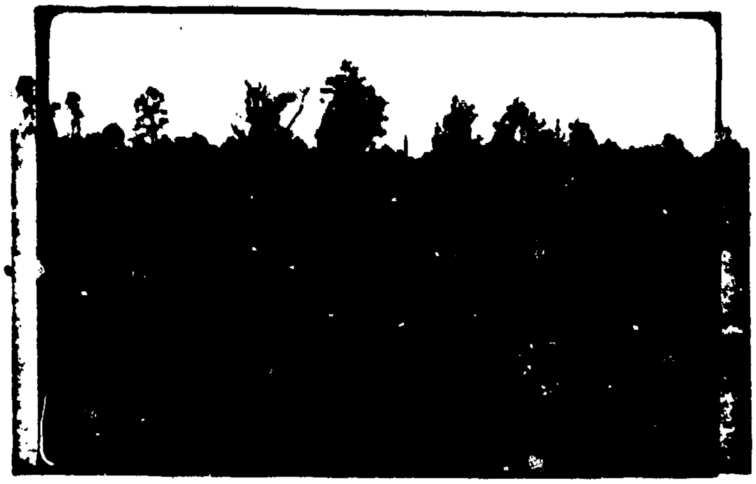


Fig. 8. Ground-level view of terrain types 10 and 15

Fig. 9. Ground-level view of terrain type 18

Fig. 10. Ground-level view of terrain type 13

Fig. 11. Ground-level view of hydrologic geometry type 27/3 (water depth > 3 ft)

26. <u>Areal terrain types</u>. The surface composition maps used in this study contained four mapping classes of soil strength in terms of rating cone index (RCI): 10-25, 25-60, 60-100, and greater than 100. The 10-25 class did not occur in the areas mapped in the wet season nor the dry season. Also, since an RCI of 60 or greater did not significantly affect vehicle performance, classes 60-100 and greater than 100 were grouped as one class, i.e. greater than 60 RCI. Thus the two soil strength classes involved in the study were 25-60 and greater than 60 RCI. The total area of terrain types with RCI's in the 25-60 range increased in the wet season, and the area of terrain types with RCI's greater than 60 decreased correspondingly. The location and extent of these changes are indicated in plate 5. When the surface composition factor map portraying soil strength in the wet season was overlaid on the surface geometry and vegetation factor maps, 11 new terrain types were created. These new types are identified in plate 3 by a number and the letter "A."

27. For both dry-season and wet-season conditions, an RCI of 40, the approximate midpoint of the RCI soil strength class 25-60, and an RCI of 60 for the second class were used in the analysis. Since the vehicle cone indexes (VCI's) of all the vehicles were less than 40 (see table 1), none of the vehicles was expected to be immobilized because of soil strength. (Actually, even when wet-season soil strengths were considered in combination with slope and vegetation, there were no impassable areal terrain types.)

28. Because the terrain selected was situated on a regional topographic high (Korat Plateau), wet-season conditions were assumed to cause only moderate changes in soil strength, not great enough to change the relative ranking of the vehicles. However, since there was greater uncertainty as to what the net effects of vehicle performance would be for these still lower soil strengths, the soil strength was reduced to 35 RCI in all terrain types having a 40 RCI in the wet season, and another analysis was performed. The value of 35 RCI was selected because it was within the 25-60 class range and above the minimum soil strength requirements to permit one pass of all the vehicles. This second analysis (35 RCI) is applicable to slightly wetter-than-average soil conditions in the wet season. The location and extent of all terrain types with a wet-season soil strength of 40 RCI (first

analysis) and 35 RCI (second analysis) are indicated in plate 6 as shaded area.

29. Linear terrain types. The most pronounced effect of wet-season conditions was manifested in the time penalties imposed for stream crossings included in the optimum route selected. At 17 locations, the wet-season water depth increased from less than 3.0 ft to greater than 3.0 ft. As noted in plate 4, streams with water depths of less than 3.0 ft are analyzed as surface geometry features rather than as hydrologic geometry features. Some bank configurations that were negotiable when a vehicle was fording the streams became more critical when the vehicle was in the swimming mode. In other cases, however, the reverse situation was true, since maximum slopes that occurred on the lower portions of the banks were avoided as the amphibious swimming vehicles contacted the banks at higher elevations.

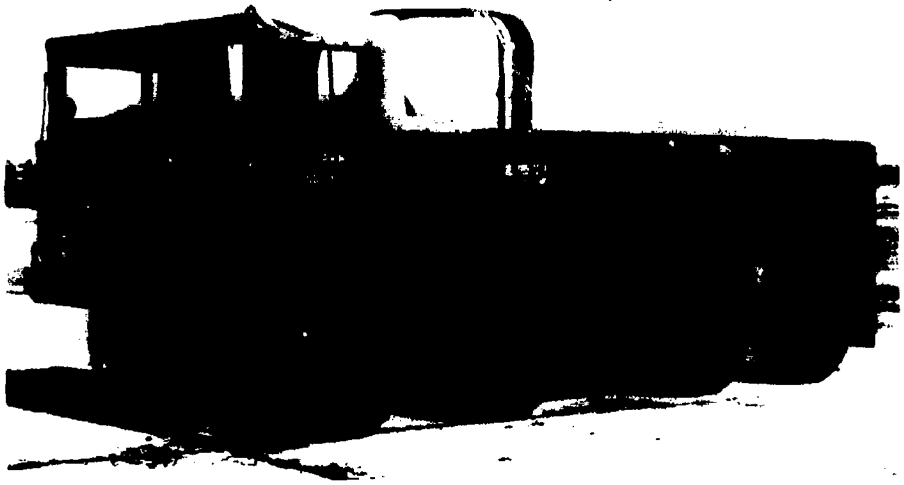
30. New routes were selected for the wet-season evaluations in an attempt to reduce the number of streams to be crossed, and thus to avoid as many immobilizations as possible. In certain cases, however, more streams were crossed, but the time lost was reduced; in other cases, the vehicles had to be rerouted completely, even to crossing a bridge some distance away.

Performance Evaluation Data

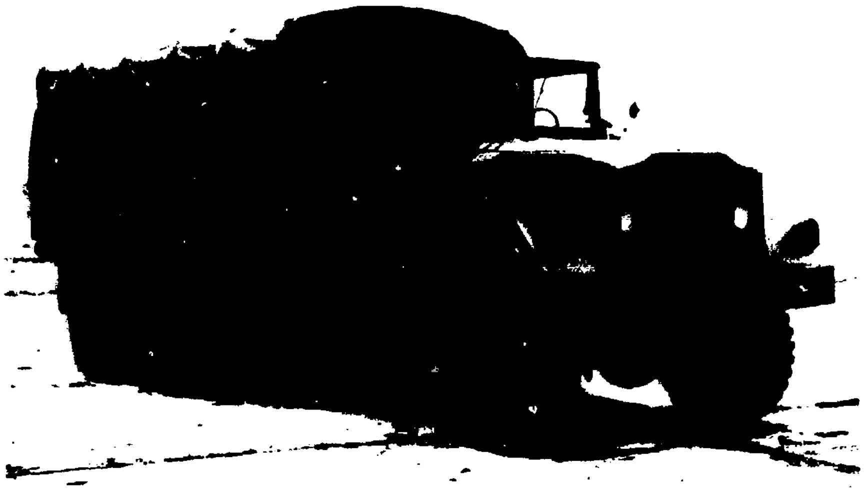
31. The vehicle characteristics and performance data for the wheeled and tracked vehicles used in this study are summarized in tables 1 and 2, respectively; figs. 12 and 13 are photographs of the wheeled and tracked vehicles, respectively.

Maximum performance on paved, level surface

32. Relations of tractive force versus speed on a paved level surface for all the vehicles of interest (fig. 14) were derived from data published by the Development and Proof Services (DPS), Aberdeen Proving Ground, Maryland[4,5]. The curves in fig. 14 were terminated at 40 mph, which was the upper-limit speed imposed for cross-country travel in this study.



a. XM656 Truck, Cargo, 5 Ton, 8x8 (GPV)



b. M54A2 Truck, Cargo, 5 Ton, 6x6

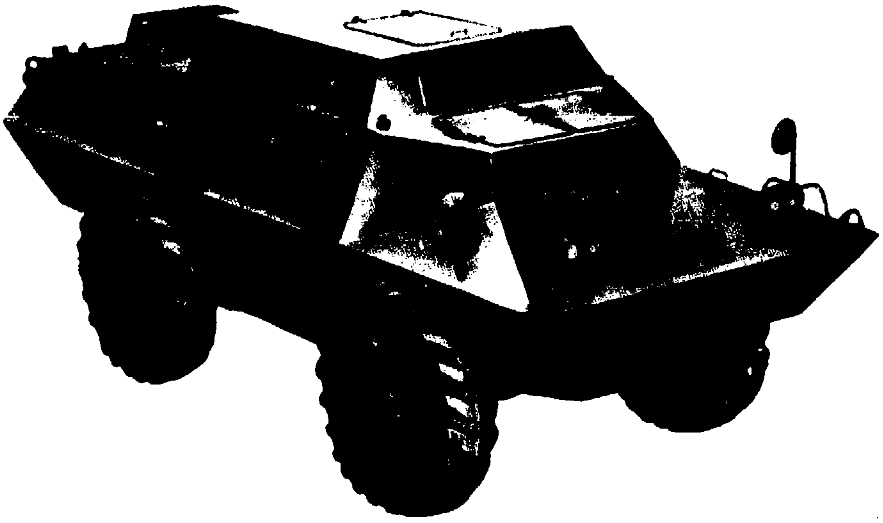
Fig. 12. Wheeled vehicles used in study (1 of 3 sheets)

c. M520, Truck, Cargo, 8 Ton, 4x4 (GOER)

d. M37B1, Truck, Cargo, 3/4 Ton, 4x4

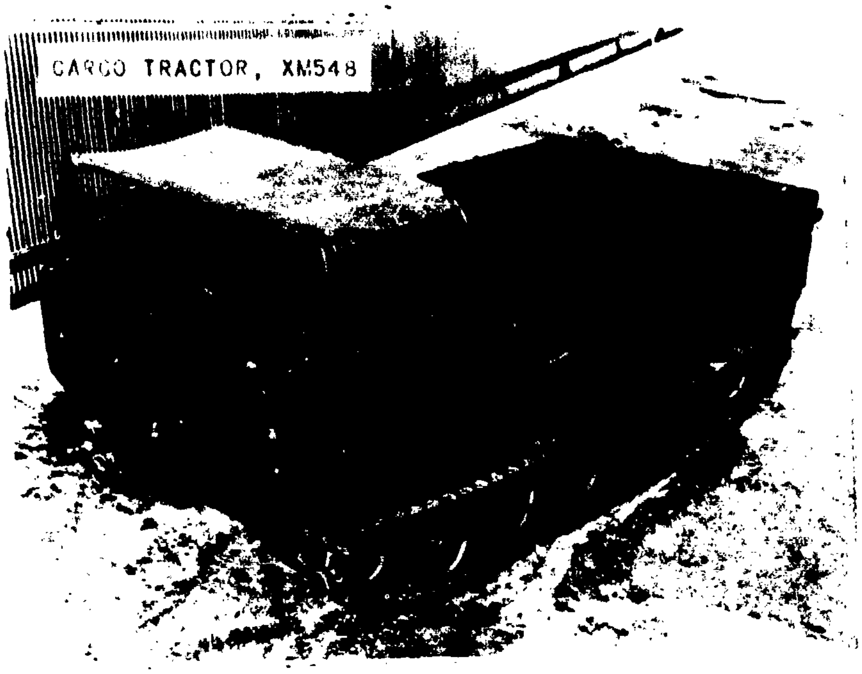
Fig. 12 (2 of 3 sheets)

e. M561, Truck, Cargo, 1-1/2 Ton, 6x6

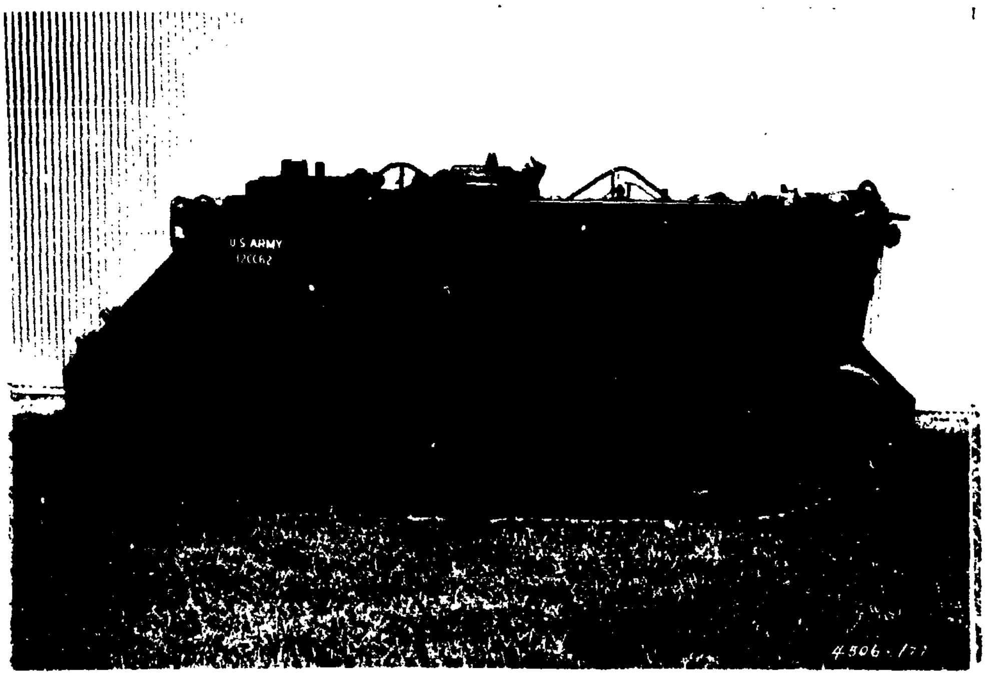


f. M706, Car, Armored, Light, 4x4

Fig. 12 (3 of 3 sheets)

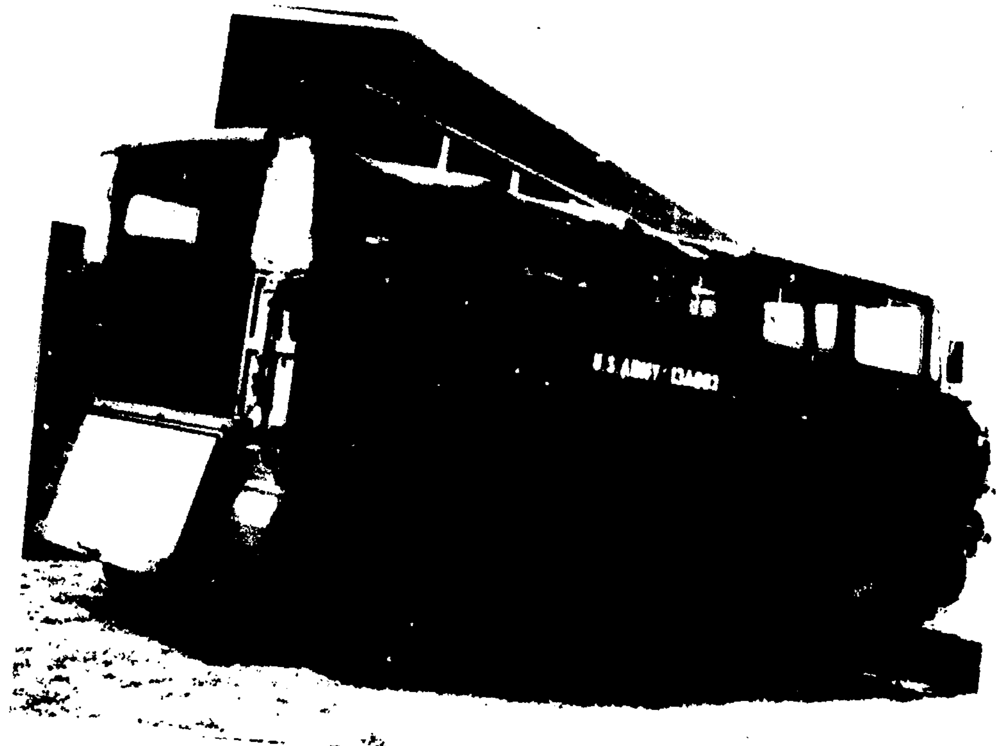


a. XM548, Carrier, Cargo, 5 Ton, Tracked

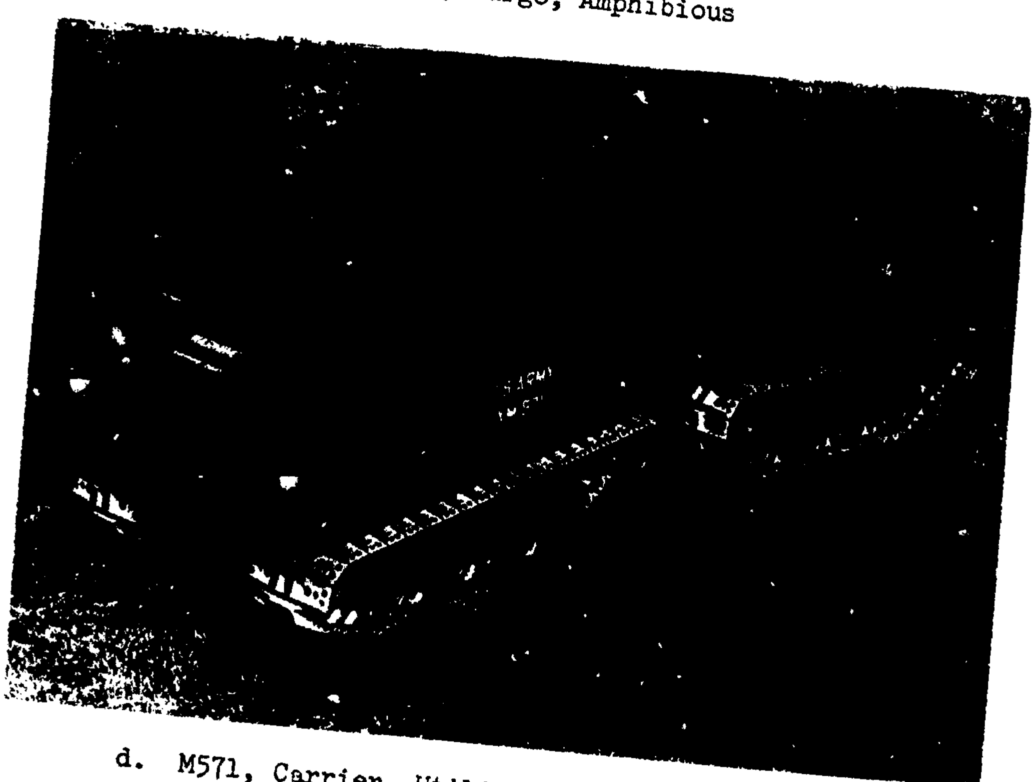


b. M113A1, Carrier, Personnel, Full-Tracked, Armored

Fig. 13. Tracked vehicles used in study (1 of 2 sheets)

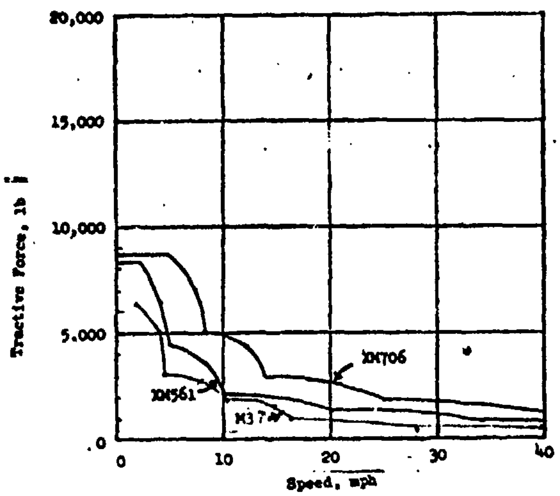


c. M116 Carrier, Cargo, Amphibious

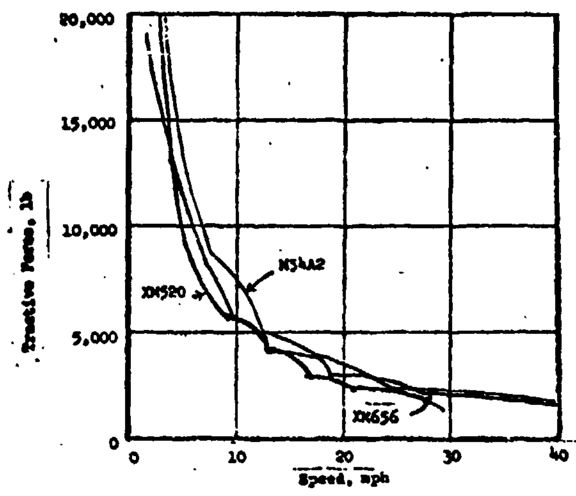


d. M571, Carrier, Utility, Articulated, Full-Tracked

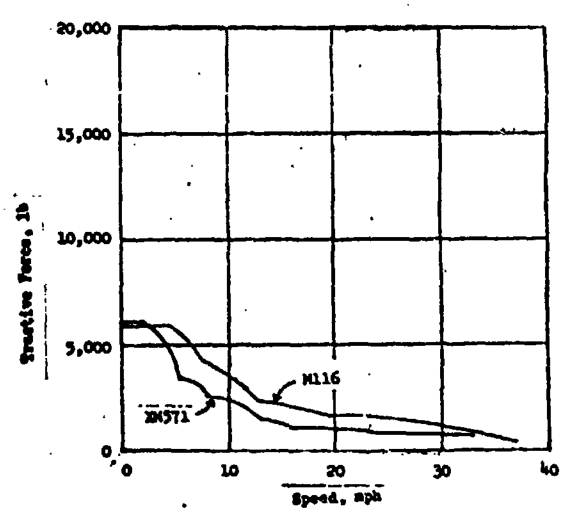
Fig. 13 (2 of 2 sheets)



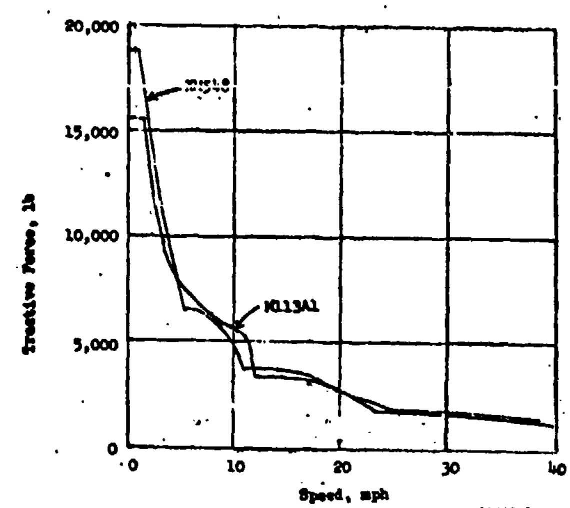
a. XM561, M37, XM706



b. XM520, M54A2, XM656



c. XM571, M116



d. XM548, M113A1

Fig. 14. Maximum tractive force versus speed on level pavement

Effects of soil consistency on speed

33. Data reported by DPS for the drawbar pull-speed relations on a paved surface were accounted for in computing tractive force-speed relations for 60, 40, and 35 RCI soil strength values. Computer programs were used to compute tractive force-speed curves and motion resistance for all vehicles and soil strengths. Input consisted of data derived from the tractive force-speed curves for pavement (fig. 14), and drawbar pull-soil strength curves (fig. 15), motion resistance-soil strength curves (fig. 16) and tractive force-slip curves for the specific soil strengths used in this study. The drawbar pull-RCI relation for the M548 was established by using field test data for the M113 and adjusting for the difference in the weights of the two vehicles.

34. Since tractive force-slip relations were not available for the vehicles and soil strengths considered in this analysis, the following assumptions were made:

a. The maximum tractive force the vehicles could develop in soil occurred at 20% slip.

b. The percentage of slip decreased with traction in a linear manner from 20% at the maximum tractive-force value to 0% at the tractive-force value required to overcome motion resistance.

Effects of surface geometry on performance

35. Except for several special conditions discussed below, the procedures described in table 1, Appendix A, were used to obtain input data for determining the effects of surface geometry on vehicle performance. For example, the relations of percentage of area denied versus speed for all the vehicles in the study are presented in fig. 17.

36. Macrogeometry. Slope class ranges shown on the terrain map (plate 1) were assumed to occur in equal proportions positive and negative to the direction of vehicle travel. If the net tractive force ($T_f - R_s$) acting up the slope is greater than the force of the vehicle acting down the slope ($W \sin \theta$), the vehicle could operate up the slope unassisted. If it could not operate up the slope, a driver probably could

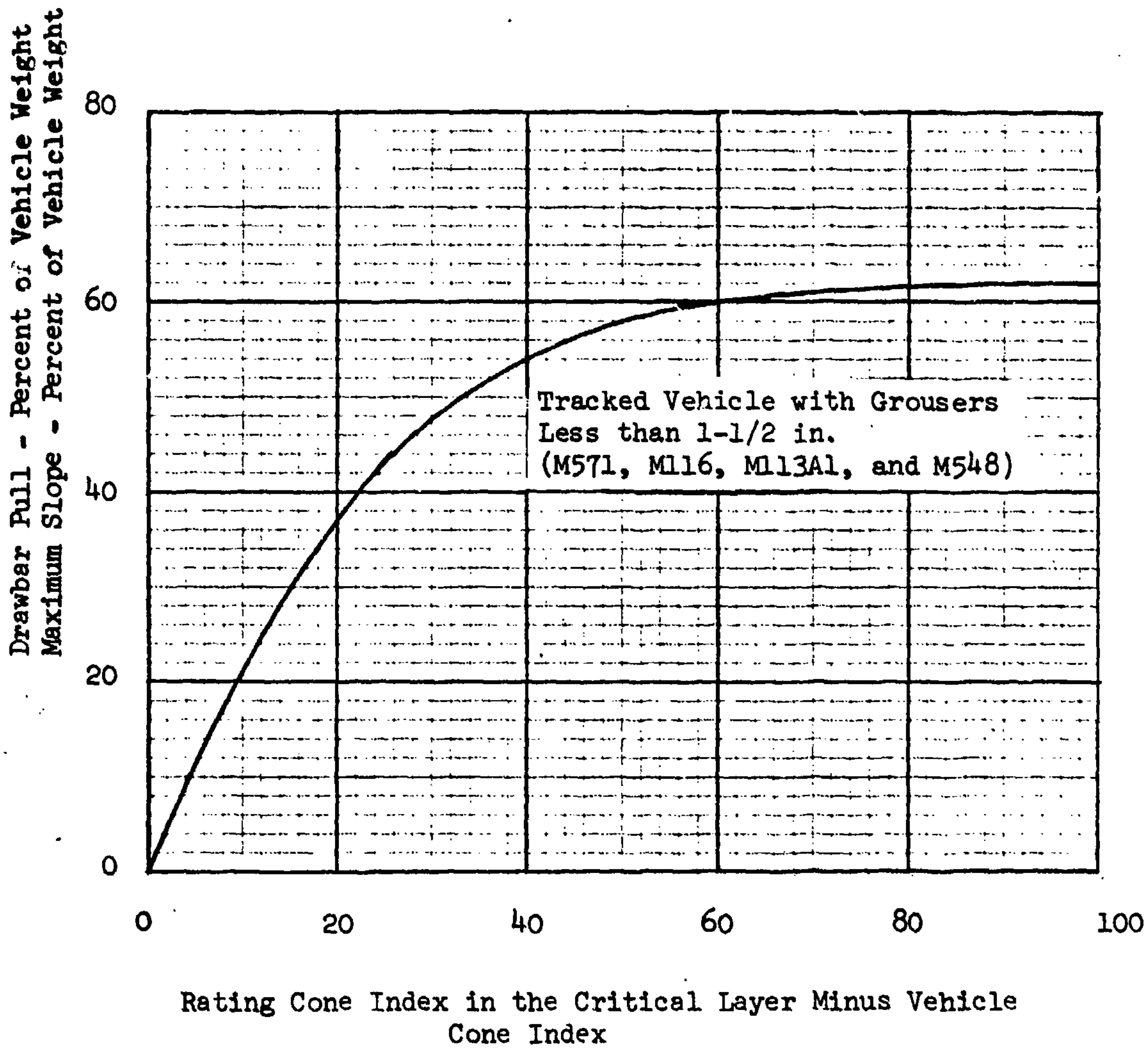


Fig. 15. Drawbar-pull and slope-climbing performance curve for tracked vehicles in fine-grained soils

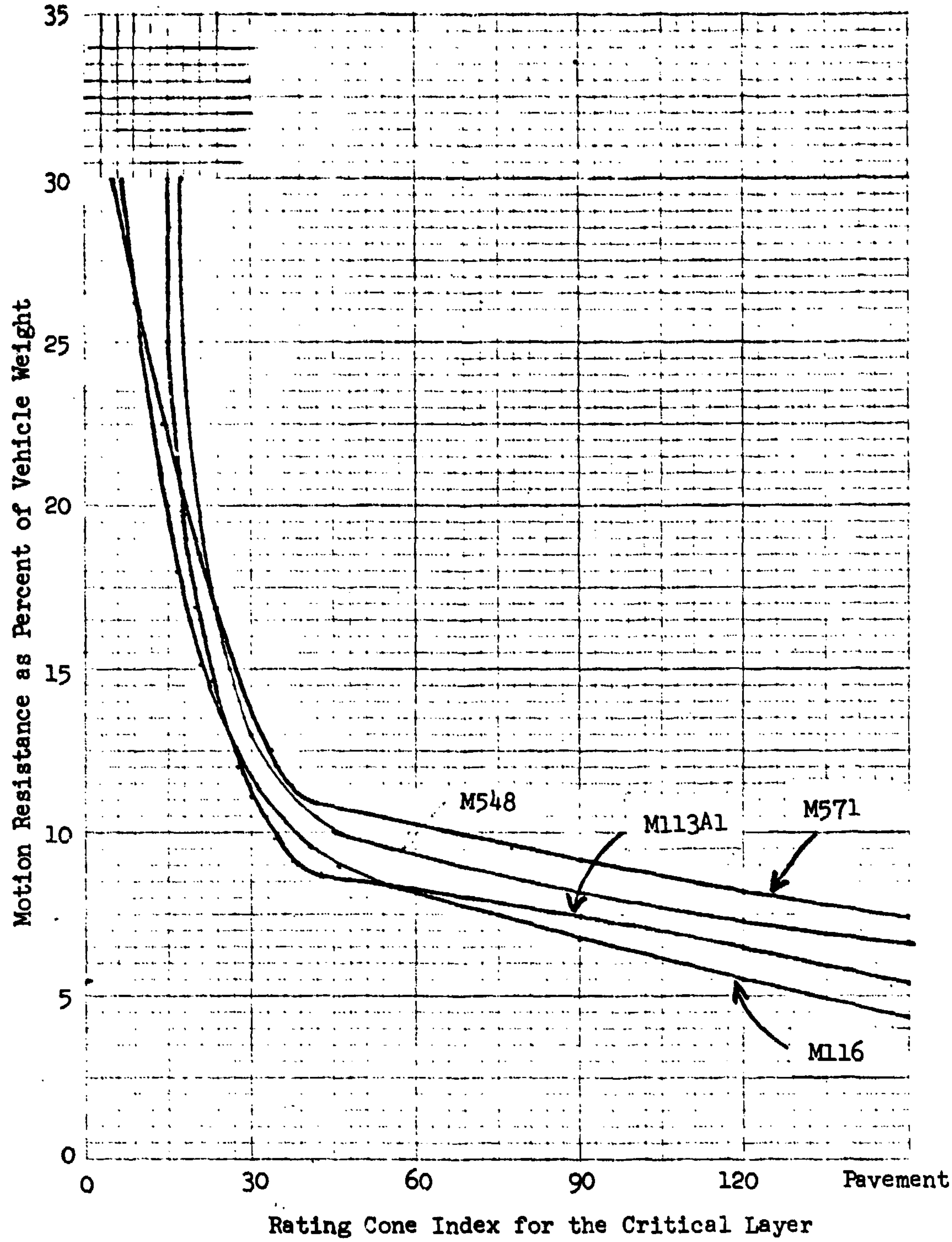
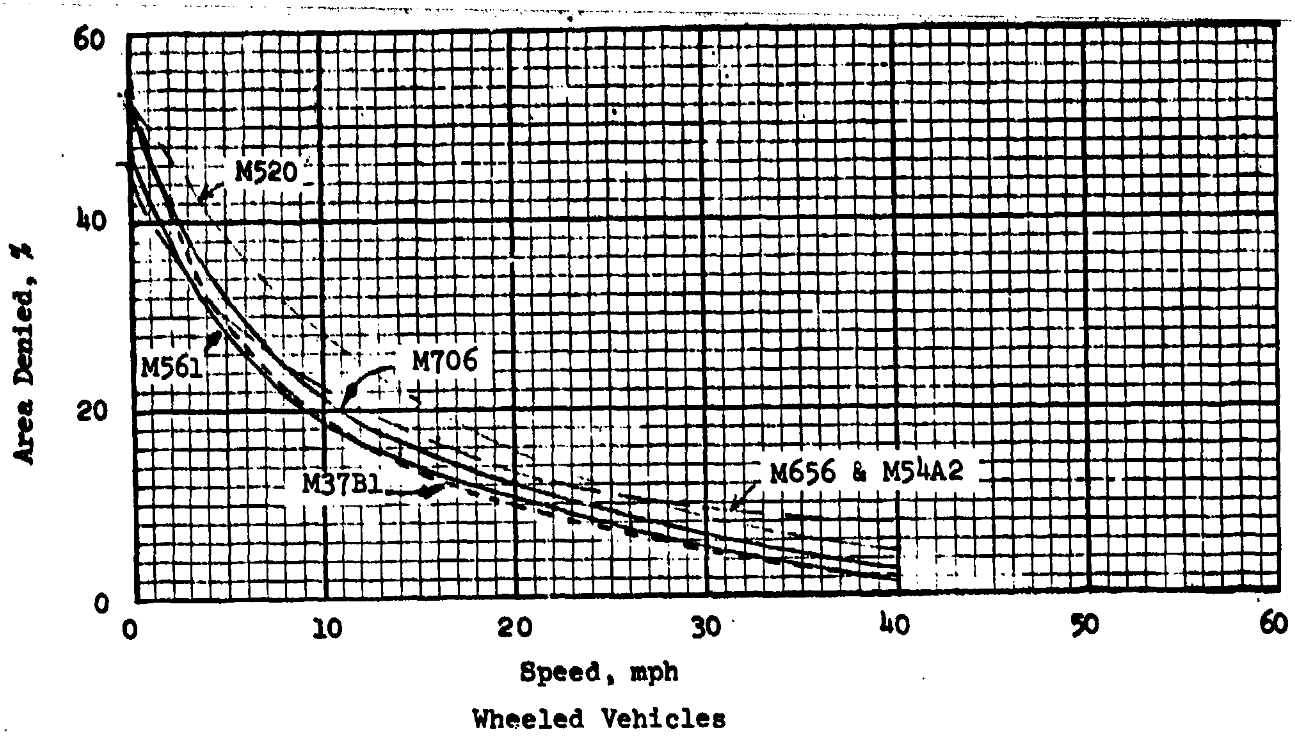


Fig. 16. Motion resistance performance curve for tracked vehicles in fine-grained soils



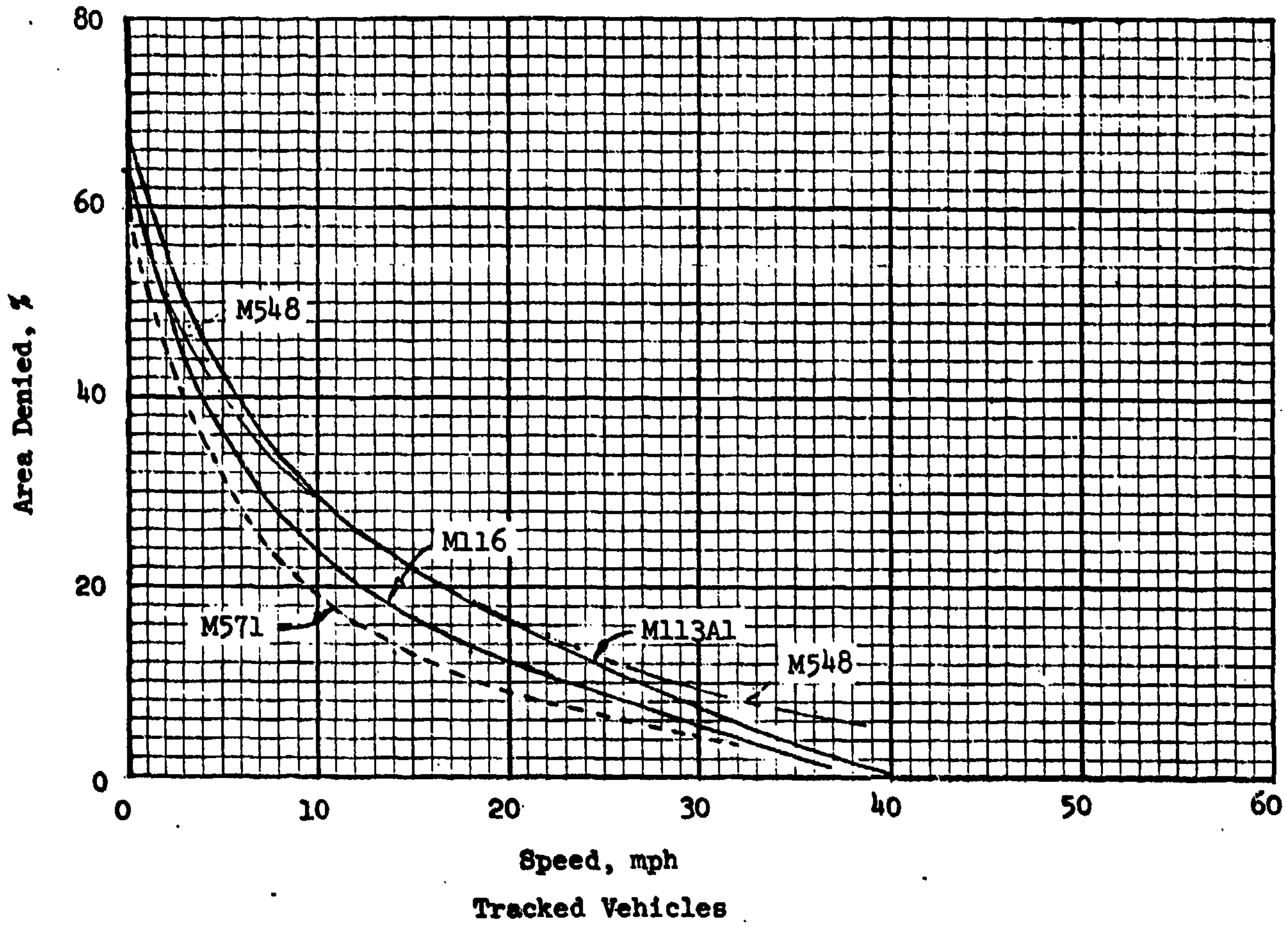


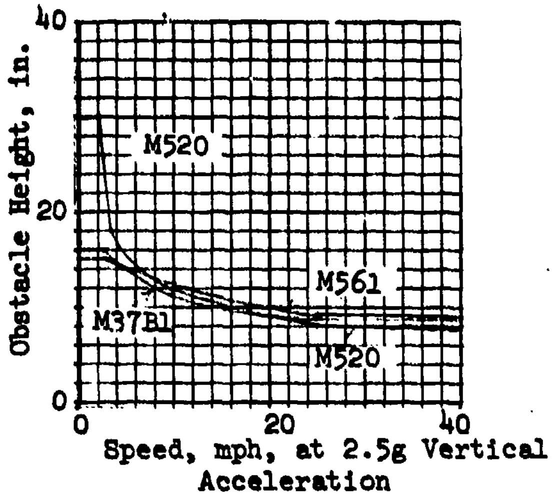
Fig. 17. Area denied-speed relations

not control the vehicle if it went down the same slope; thus, an assumption was made that the vehicle should not travel on such slopes unassisted regardless of the direction of travel with respect to the slope. If slopes too steep for the vehicle to negotiate unassisted existed in the terrain segment, the vehicle was routed around the entire segment, if possible; if it could not be routed around, a time penalty was imposed equal to the estimated time required for the vehicle to winch itself up or down the slope. Since the direction of a slope was assumed always in the direction of travel, performance on side slopes (parallel to slopes) was not considered. To predict performance in terms of actual slope position would be possible by using a contour map overlay for the terrain map. This refinement in the evaluation procedure is essential for tactical purposes; but is beyond the capability of the present model.

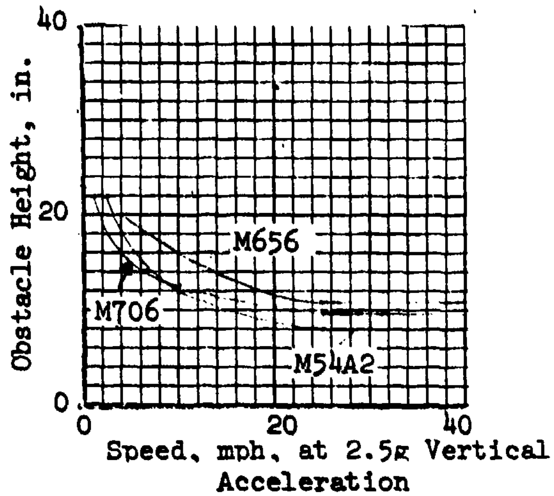
37. Microgeometry. The roughness of the terrain and its effect on the vehicle driver must be assessed if the effects of microgeometry on performance are to be determined. Curves were established relating the speeds at which the various vehicles could cross obstacles of various heights without exceeding a vertical acceleration of 2.5 g's at the driver's seat (considered to be the maximum tolerable). Data from tests at WES or DPS were used to develop such relations (fig. 18) for all the vehicles. The relations determined at WES for a 5-ton XM520 were adjusted for the 8-ton M520; those from WES tests with an M113 were adjusted for the M548. Only limited test data were available for the tracked vehicles as a group, and to distinguish any significant differences in their performance from these data was impossible. Therefore, the same performance curve was used for all the tracked vehicles.

38. The dynamic-response model developed by FMC Corporation[6], which considers three degrees of freedom (pitch, roll, and bounce), was modified by WES to incorporate a representation of tire compliance[7] and was used to determine an obstacle height-speed relation for the M706. The vehicle characteristics and development of the dynamic model of the M706 are given in Appendix B. In the application of the FMC model, the terrain was described in terms of x-y coordinates.

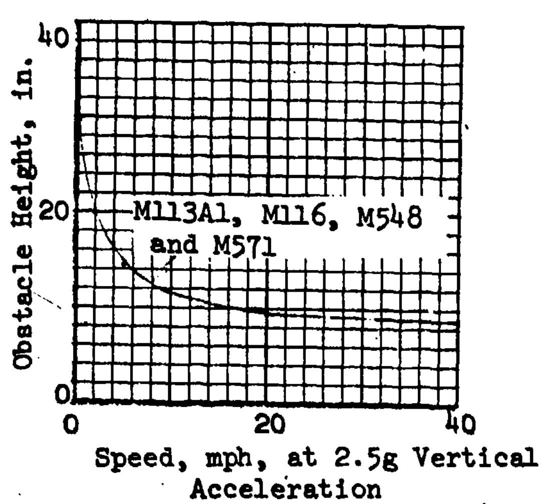
39. The M706 was "run" at selected speeds over single, trapezoidal,



a. Wheeled Vehicles



b. Wheeled Vehicles

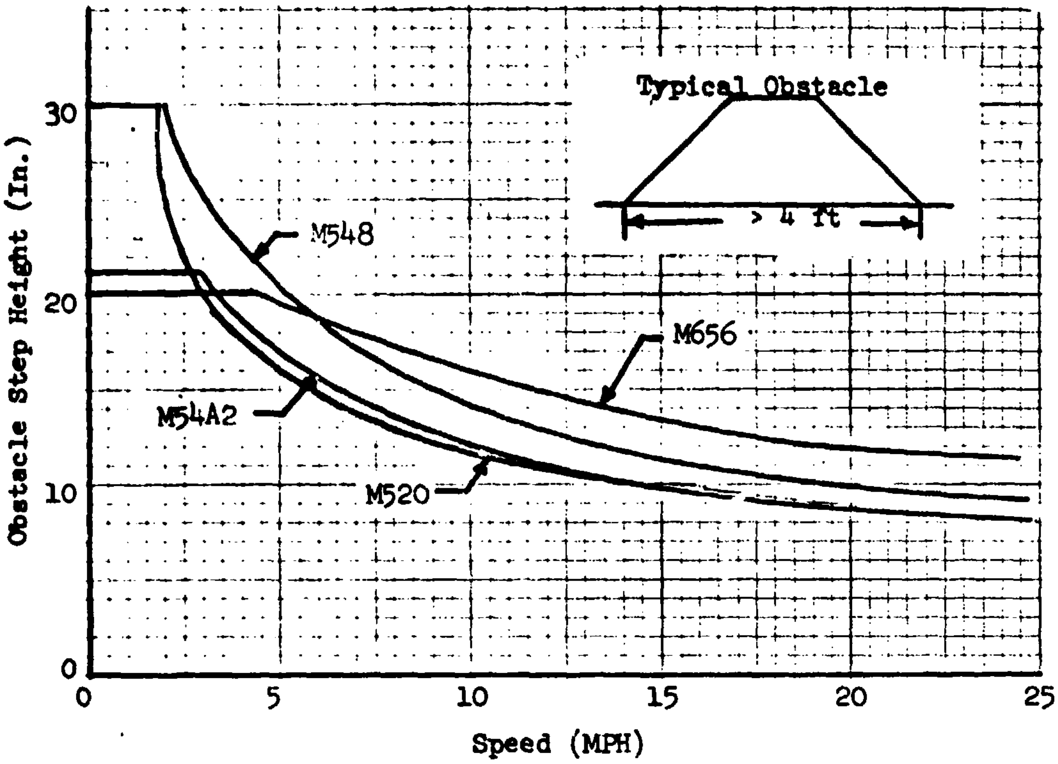


c. Tracked Vehicles

Fig. 18. Vehicle performance as limited by driver's response to vertical acceleration

obstacle cross sections of varying heights. The dimensions assigned to the cross section were (a) 45 deg for approach and departure angles, representing the approximate midpoint of the mapping class range 30-55 deg; (b) a 12-in. crest width, based on field observations and measurements made in Thailand; and (c) a single height within the range of 4 to 20 in. Only one obstacle was traversed during a run, and the selected speed was held constant. The obstacle was assumed to be rigid and fixed on a smooth, level, firm surface. The impact forces transmitted through the tire[7] and suspension system[6] were used to compute vertical displacements at the body center of gravity (C.G.). These displacements were corrected by both translation and rotation through pitch and roll to show actual displacements at the driver's seat. Vertical acceleration at the driver's seat was predicted by taking the second derivative of vertical displacement with respect to time. These data were used to establish a basic relation between vertical acceleration at the driver's seat and speed for each obstacle height. From these basic curves, the relation of obstacle height and speed for 2.5-g acceleration at the driver's seat was derived for the M706, and is shown in fig. 18.

40. In the early phases of this study, the following special procedures were used to predict vehicle performance in rice fields with dikes 10-18 in. or 18-30 in. high. Maximum speed versus obstacle step height was plotted, and the resulting curves were used to determine the maximum speed at which each vehicle could negotiate dikes (fig. 19). An illustrative example of the way in which average speed in rice fields was determined for each vehicle is given for an arbitrarily chosen dike spacing in fig. 20. The vehicle was assumed to travel a distance equal to the base width of the dike (assumed to be 4.0 ft in all cases) plus the wheelbase of the vehicle, at the maximum speed indicated by the limiting dynamic response of the vehicle. Beyond this distance, the vehicle was assumed to accelerate in accordance with the curve derived from a plot of tractive force versus speed in a soil of similar consistency and motion resistance. The period of acceleration is from 15 to 135 ft on the performance curve in fig. 20. The driver stopped accelerating the vehicle at 35 ft and the vehicle was assumed to travel at the maximum speed during the reaction time wherein he anticipated crossing the next dike. The driver reaction time of 0.5 sec was set arbitrarily;



NOTE: M113 curve (established from WES test data) substituted for M548.

M520 curve established from testing XM520 (WES).

M656 and M54 curve established from Aberdeen Proving Ground data. Vehicle maximum speed for crossing 12-in. bump given.

Fig. 19. Relation between obstacle step height and speed which is controlled by driver tolerance (approximately 2.5 g)

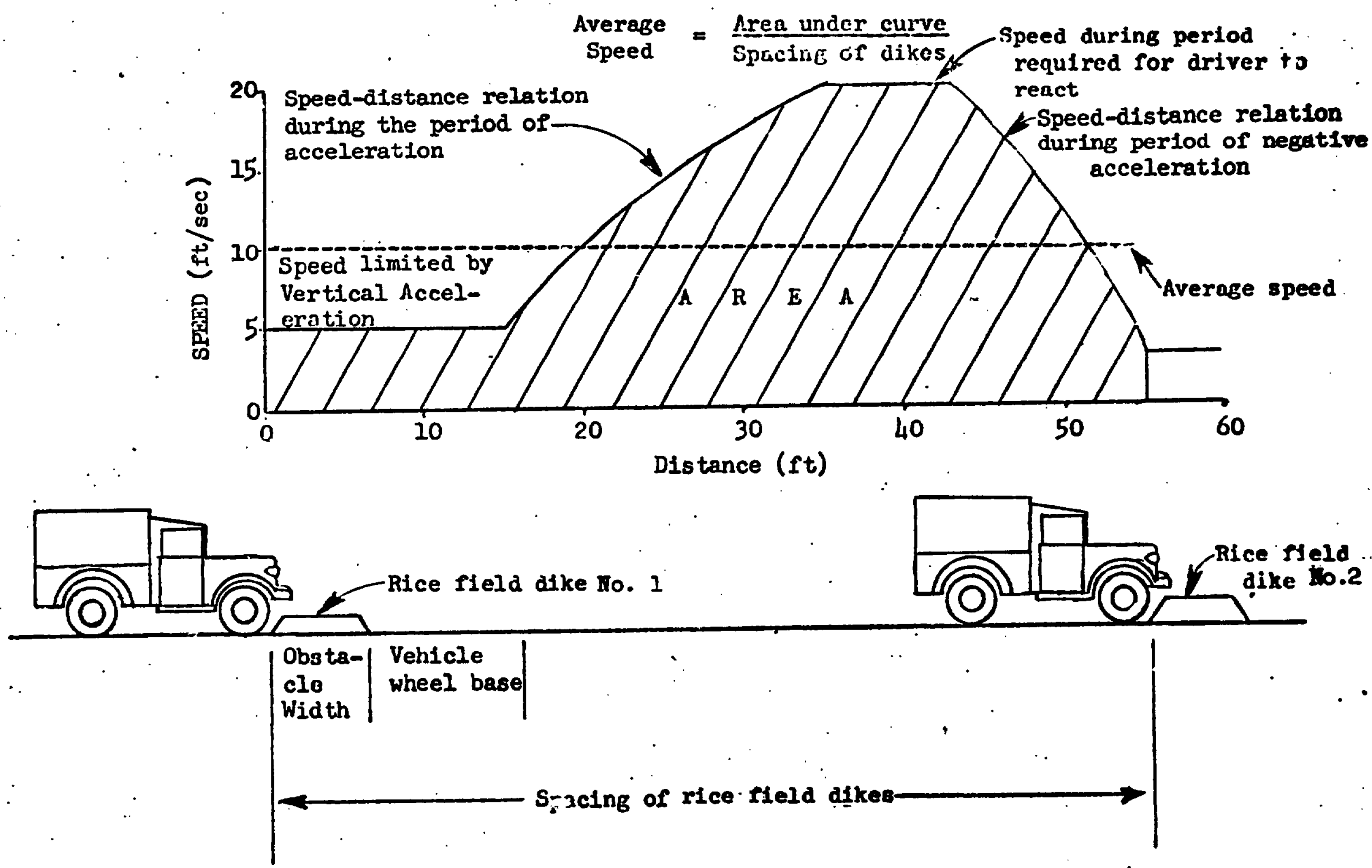


Fig. 20. A graphical method for predicting vehicle performance in rice fields

the distance (ft) traveled during the driver reaction time was 9 ft. When the driver began to apply the brakes (44 ft), the negative acceleration of the vehicle was assumed equivalent to the maximum positive acceleration. The four segments were analyzed by integrating the total area under the performance envelope and dividing the result (ft^2/sec) by the dike spacing (ft) and the average speed predicted.

41. In rice fields with dike heights greater than the clearance of the vehicle, a 20-min time penalty was imposed for each dike; the average speed attained between dikes was discounted since the time was insignificant compared to the penalty time involved. Consequently, the average speed in rice fields in Route 1 with dikes of sufficient height to cause immobilization was computed to be 0.1 mph.

42. As stated in paragraph 17, a computer program was prepared during the later phases of this study and used for predicting speed in rice fields. This program was used for only the six vehicles evaluated and reported upon in the last draft report (see paragraph 4). Input consisted of:

- a. Spacing of rice-field dikes
- b. Height of dikes
- c. Base width of dikes
- d. Motion resistance of vehicle in paddy soil
- e. Tractive force-speed curve for paddy soil strength
- f. Braking rate (deceleration)
- g. Braking reaction time
- h. Obstacle height-speed curve (fig. 18)
- i. Wheelbase, or track length, in contact with the ground

The program computed the total time required for a vehicle to cross a dike, accelerate in the paddy, and then decelerate, if necessary, before crossing the next dike. The distance traveled in crossing one dike and one paddy was divided by the elapsed time to obtain the average speed performance.

Effects of vegetation on performance

43. Data needed to analyze the effects of vegetation screening on the ability of the driver to see were lacking so no speed limitations were imposed for poor visibility. This omission was not considered significant for two reasons: (a) approximately 70 percent of the vehicle travel time

was spent in rice fields where visibility is seldom a problem, and (b) the field of vision from the driver's position is approximately the same for each vehicle.

44. Rather than declaring areas of heavy vegetation impassable, a time penalty of 5 min was assessed for every 11 ft of travel, based on the time needed to cut down one large tree (10 in. in diameter) to permit passage.

Effects of hydrologic geometry on performance

45. Special conditions imposed in the early phases of the study because of hydrologic features were:

a. Entry into all streams and lakes was assumed possible for all vehicles.

b. To determine stream widths accurately was impossible because of the small map scale. A 75-ft width was assumed arbitrarily and the time required for each crossing (swimming or fording) was based on an assumed speed of 3.0 mph. This combination of width and speed was assumed to include entry, crossing, and exit. When the rated water speeds (table 1) were obtained later in the study, the error involved in the assumption for speed was seen to be insignificant. Therefore, in only one instance, where the M520 had to swim a lake 600 ft across, the rated water speed of 3.3 mph and the measured width of the lake were used.

c. When immobilization was predicted, a time penalty of 20 min was assessed. The 20-min time penalty was based on a report from the Army Concept Team in Vietnam, which stated that a well-trained crew could cross a canal with an M113 armored personnel carrier in 15-20 min when using the capstan-anchor method of self-recovery. Only one immobilization per crossing was imposed.

46. The above-listed special conditions were imposed also in the study reported in June 1968 (see paragraph 4). In addition, certain other modifications were made to the procedures described in reference 1. These modifications are discussed in the following paragraphs.

47. Stream crossing. Performance at stream crossings was restricted to the vehicle's ability to exit. To predict stream exit performance, determination was made as to whether the vehicle could negotiate the exiting stream bank unassisted, assisted by winching, or not at all. For amphibious vehicles, zero traction was assumed for all traction elements in the floating mode. If a nonamphibious vehicle could not cross a stream because the water depth was greater than the fording depth, the vehicle was rerouted.

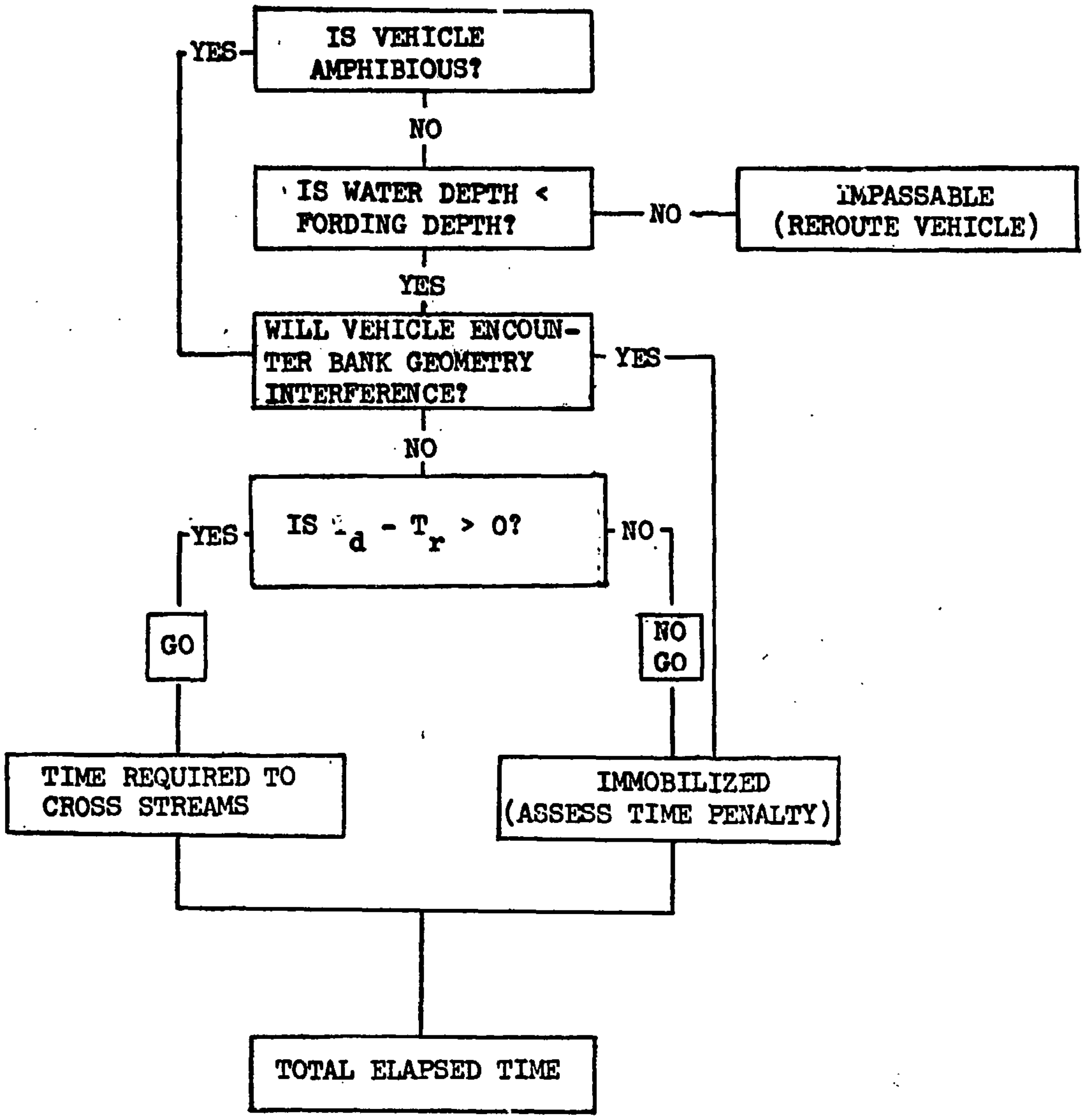
48. If assistance was not required, the total time to cross the stream was computed without a time penalty. Based on the 3.0-mph average speed assumed for each crossing and the 75-ft width assumed for each stream (see paragraph 45b), the time to cross any stream without penalty was 17 sec. If assistance was required, a time penalty was assessed and was considered to be the total elapsed time to cross the stream. This time was 1200 sec (see paragraph 45c). The procedure used to predict the total elapsed time is illustrated in fig. 21.

49. Bank-vehicle geometry interference. A two-dimensional scale model of the vehicle and a profile of the stream channel were used to determine whether interference between the vehicle and exit bank would occur. If any part of the vehicle, other than its tracks or wheels, contacted the profile while exiting, the vehicle was considered immobilized and a penalty was assessed (fig. 21).

50. Tractive force required to climb stream banks. The tractive force that a vehicle could develop on a slope (T_d) and the tractive force required (T_r) beyond that needed to propel a vehicle on level ground were computed using input values obtained with the bank-vehicle geometry scale model (paragraph 49). Predictions were made on a go-no go basis (fig. 21).

51. The tractive force that a wheeled vehicle, regardless of the number of axles, could develop on a slope was computed by the following equation:

$$T_{dw} = \frac{W_1}{W} \text{ DBP} \cos \theta_m + \sum_{x=2}^{n} \left[\left(\frac{W_x}{W} \text{ DBP} \cos \theta_x - W_x \sin \theta_x \right) \cos (\theta_m - \theta_x) \right]$$



Where:

T_d = Tractive force that can be developed by a vehicle on a slope

T_r = Tractive force required beyond that needed to propel the vehicle on level ground

Fig. 21. Procedure for predicting performance of vehicles in crossing streams

and the tractive force required (T_{rw}), beyond that needed to propel the vehicle on level ground, for the wheeled vehicles (M37B1, M561, and M706) to exit from a stream was computed by:

$$T_{rw} = W_1 \sin \theta_m$$

where

T_{dw} = tractive force a wheeled vehicle can develop on a slope, lb

W_1 = maximum axle load, lb

W = total vehicle weight, lb

DBP = drawbar pull on a level surface, lb

θ_m = maximum bank angle, deg

n = total number of axles

W_x = axle load, lb, for any axle from 2 to n

θ_x = angle of the bank slope in contact with the wheels of a given axle, deg

T_{rw} = tractive force required to lift the maximum axle load up the maximum bank slope, lb

In computing T_{rw}, the weight on each axle was computed by taking the sum of the moments about the wheel ground contact points for different positions of the vehicle on the bank. By these successive solutions, the most critical conditions for exiting were defined and used in predicting performance.

52. The tractive force that a single-unit tracked vehicle could develop on a bank slope was computed by the following equation:

$$T_{dt} = \text{DBP} \cos \alpha$$

and the tractive force required for the single-unit tracked vehicles (M113A1 and M116) to exit from a stream was computed by:

$$T_{rt} = W \sin \alpha$$

where

T_{dt} = tractive force a tracked vehicle can develop on a slope, lb

DBP = total drawbar pull on a level surface, lb

α = maximum attitude angle the vehicle will attain in climbing a bank, deg

T_{rt} = tractive force required for a tracked vehicle, lb

W = total vehicle weight, lb

53. To analyze the ability of the articulated M571 to exit from streams, values of T_{dt} and T_{rt} were determined separately for the front and rear units. These separate values were added to obtain the total T_{dt} and T_{rt} values.

54. In all cases, T_d and T_r values computed were compared, and if $T_d - T_r > 0$, a go condition was predicted, or if $T_d - T_r < 0$, a no-go condition was predicted (fig. 21).

Effects of special vehicle characteristics

55. The effects of special vehicle characteristics, such as articulation, duck walking, and positive traction, were not evaluated because appropriate quantitative relations are not available (see paragraph 12). In this study it was assumed that equal traction was available at all times for all the traction elements. Articulated vehicles have a distinct advantage over rigid-frame vehicles when operating on a terrain surface in which microrelief is of paramount importance. Traction elements of articulated vehicles conform to most surface irregularities; therefore, more traction surface is available for developing tractive force and usually responses are less, producing a better ride quality. Duck-walking capability is an advantage to a vehicle when it becomes immobilized in soft soil underlain by firm soil. By simultaneously applying power to the wheels and turning the front of the vehicle from left to right, the driver may extricate the vehicle from localized soft spots.

Prediction of fuel consumption

56. Fuel consumption-speed relations for all the vehicles were computed from fuel consumption-engine rpm performance curves obtained from DPS reports[4,5]. The specific relations used as input to the prediction model for this study are shown in fig. 22. These relations are obtained when the vehicle is assumed to be performing at its maximum traction, regardless of the surface conditions or gear selections. Under these conditions, the engine rpm vary within a narrow range, and therefore fuel consumption remains fairly constant.

57. In the early phase of the study, the only special consideration involved stream crossings. To compute fuel consumption, a vehicle was assumed to operate at maximum horsepower output for 10 min for each 20-min

time penalty assessed for immobilization caused by bank configuration as the vehicle tried to exit; for stream crossings without imposed penalties, a vehicle was assumed to operate at maximum gross horsepower for the total crossing time.

58. In the 1968 study, separate procedures were used to predict fuel consumption for areal and for linear terrain types. For areal types the procedures were as follows:

- a. A fuel consumption rate (gal/hr) was determined for each predicted speed from the relations shown in fig. 22.
- b. The fuel consumption rate (gal/hr) was divided by the predicted speed (mph) to give a fuel consumption rate in gal/mile. Examples of the resulting relations for the M561, M706, M37B1, M116, M571, and M113A1 are shown in fig. 23.
- c. The total distance traveled in a terrain type was scaled from the terrain-type map and multiplied by the fuel consumption rate (gal/mile) to obtain the total amount of fuel consumed.

59. The amount of fuel consumed in crossing linear terrain types (streams) was considered insignificant unless the vehicle was immobilized. The following procedures were used to predict the consumption at those streams where immobilization occurred:

- a. A fuel consumption rate (gal/hr) was determined for a speed of 1.0 mph from the relations shown in fig. 22.
- b. One half of the time penalty assessed was multiplied by the fuel consumption rate (gal/hr) to obtain the total amount of fuel consumed.

Determination of delivery rate

60. In any given terrain situation, the performance values for any two vehicles may be different. For example, vehicle A may have a high speed, high fuel consumption, and low cargo capacity; while vehicle B may have a lower speed, lower fuel consumption, but a larger cargo capacity. The evaluation of relative performance then rests on which performance measure is deemed most important. Since such a decision is often impractical combining all performance values derived in a given terrain situation into

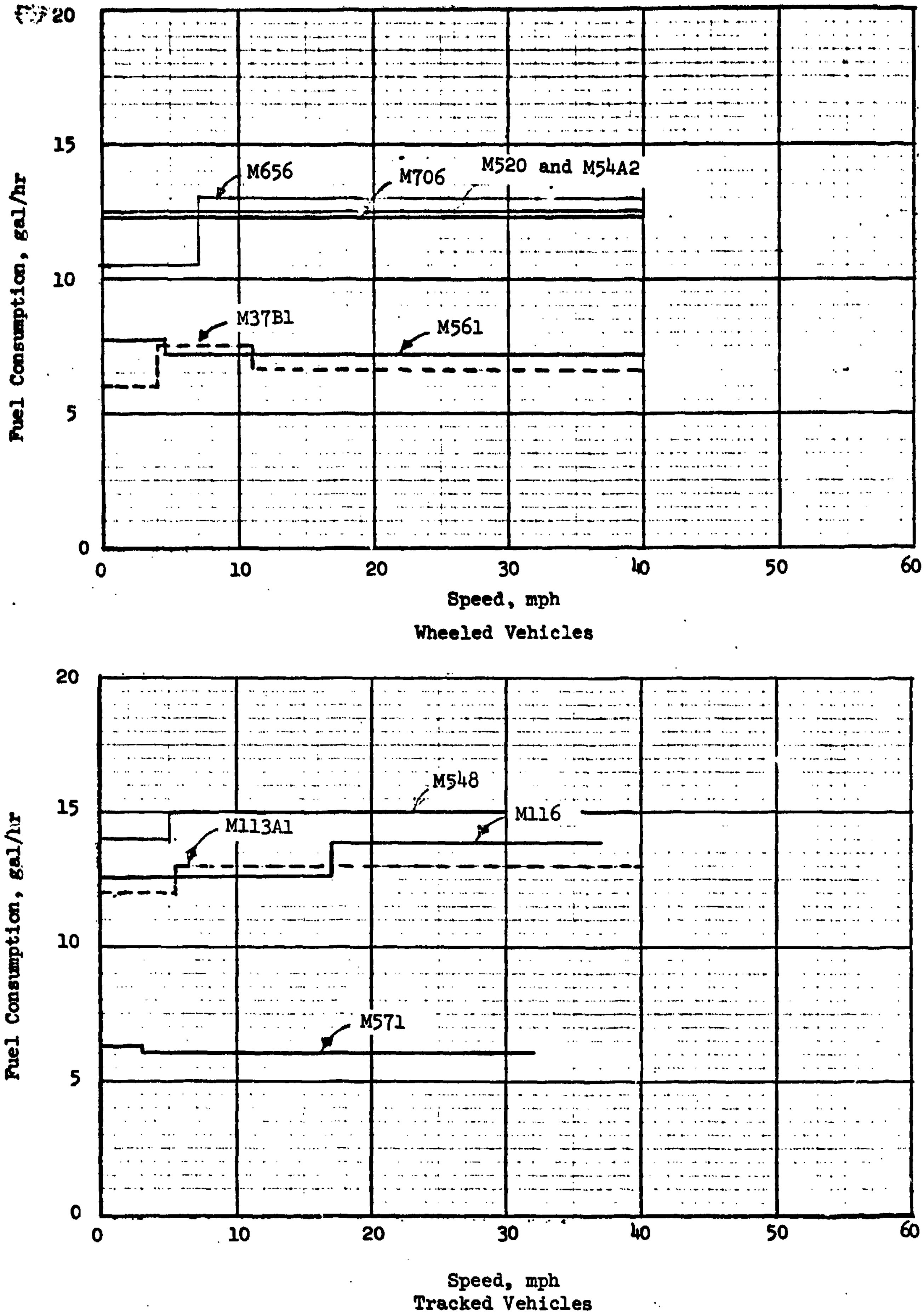
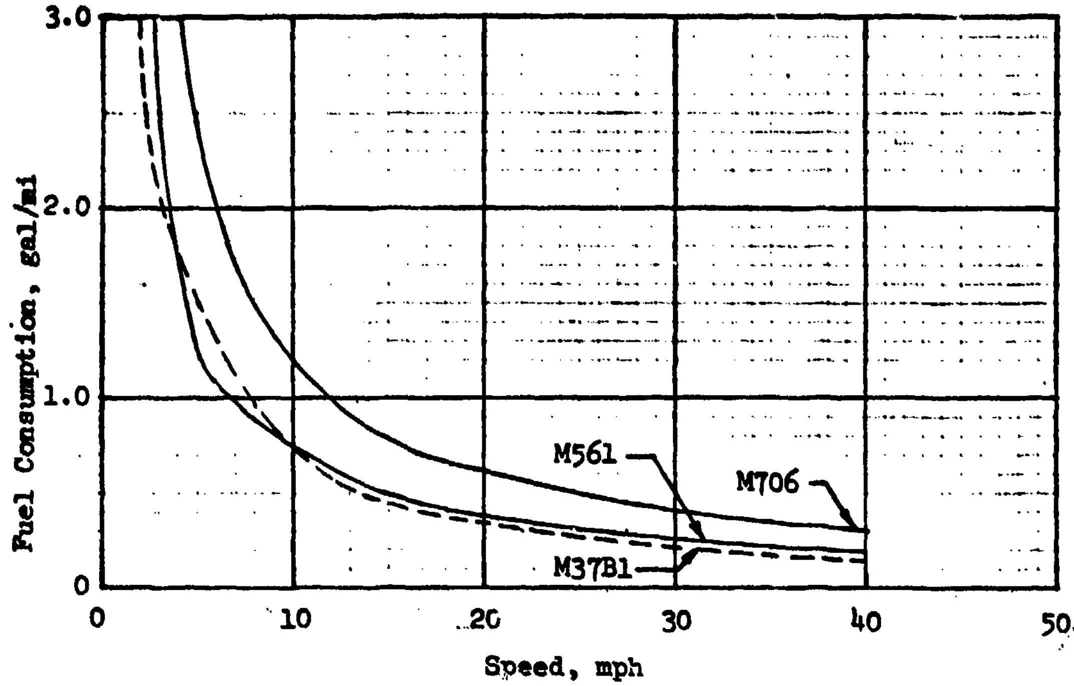
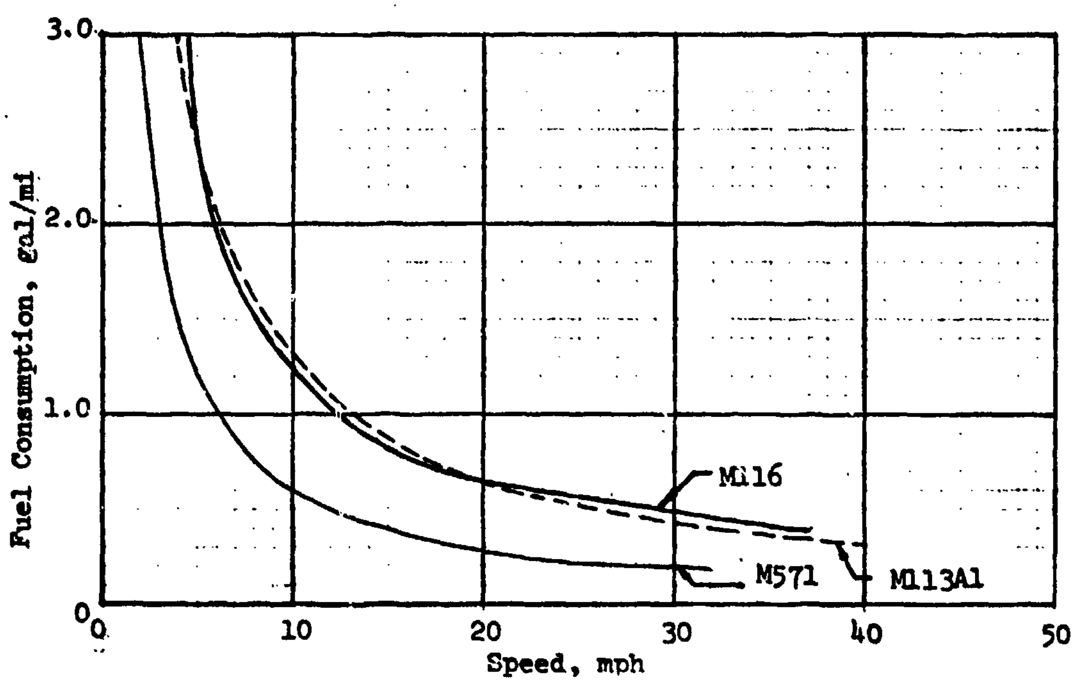


Fig. 22. Full load fuel consumption (gal/hr)-speed relations



a. Wheeled Vehicles



b. Tracked Vehicles

Fig. 23. Full-load fuel consumption (gal/mile)-speed relations

a single performance value is useful. Cargo capacity can be multiplied by average speed made good to obtain a delivery rate in ton-miles/hr. To compute average speed made good, the following expression is used:

$$\text{Average speed made good} = \frac{\text{Straight-line distance}}{\text{Total elapsed time}}$$

To compute delivery rate, the following expression is used:

$$\text{Delivery rate (ton-miles/hr)} = \text{Cargo capacity (tons)} \times \text{Average speed made good (miles/hr)}$$

PART III: EVALUATION OF VEHICLES

61. The WES analytical model (Appendix A) was used to predict vehicle performance for the dry season and the wet season, in terms of speed and fuel consumption. Cargo delivery rate was calculated from the values of average speed and payload. In the first study (see paragraph 2), in which performance was evaluated for the dry season, a soil strength of 60 or 40 RCI was used (paragraph 27). In the supplemental study (paragraph 3) for the wet season, two traverses were used, one with terrain types of either 60 or 40 RCI, and the other with terrain types of either 60 or 35 RCI (paragraph 28). In the 1968 study (paragraph 4), performance was evaluated for both the dry season and the wet season; soil strengths of either 60 or 40 RCI was used for the dry season, and either 60 or 35 RCI for the wet.

Selection of Traverses and Preparation of Speed Maps

62. The predicted performances of all the vehicles used in this study, for both the dry-season and wet-season conditions, are summarized in table 3. The predictions were made in terms of average speed, fuel consumption, and delivery rate, for all terrain types in the Khon Kaen study area. The terrain types that allowed the vehicle the highest average speed were traversed along straight-line paths, which were connected to form a continuous route. The traverse starting at Ban Meng and ending at Ban Sang Kaeo represents the optimum path within the 1.2-mile-wide limits of the route selected.

63. Because in all cases the evaluation criterion was speed, traverses were selected that would yield the highest speed. (If the traverses had been selected for other than speed, e.g. for fuel consumption or rate of delivery, they may have been different.)

64. The average speed of each vehicle was determined for the terrain factor complexes along route 1 and mobility maps were prepared. Only some of the mobility maps along with the traverse over which predictions were

made are included in this report. Those that are included are identified in the following table:

Vehicle	Plate No.	Season
M556	7	Dry
	8	Average wet
	9	Maximum wet
M54A2	10	Dry
	11	Average wet
	12	Maximum wet
M520	13	Dry
	14	Average wet
	15	Maximum wet
M548	16	Dry
	17	Average wet
	18	Maximum wet
M113	19	Dry season

65. Average speed for a total traverse was obtained by dividing the traverse length by the time spent in traveling over it. If a vehicle had to cross a water body in a particular terrain type, the time required to complete the crossing (time penalty) was added to the time required to traverse that terrain type. Performance data can be obtained by referencing terrain type and vehicle identification in table 3.

Performance in Various Terrain Types

66. The performances predicted for each vehicle in each terrain type successfully traversed along the route are tabulated in table 4. The terrain types are listed in the order in which they were traversed. The distances listed were measured along straight lines on the cross-country mobility routes. (When a change of direction occurs within a terrain type, distances are given for each segment.) In the column marked "Penalty," 17 sec denotes that a vehicle crossed a stream without assistance, and 1200 sec that assistance was required. Multiples of 17 indicate more than one stream was crossed, and multiples of 1200 indicate that more than one immobilization occurred in the same terrain type. It should be noted that the penalties listed in this column occurred only in linear terrain types. The time and fuel required for each vehicle to traverse each terrain type include those required for stream crossings.

Speed Performance

Effect of terrain type on speed

67. The maximum and minimum speed performance for all the vehicles and the terrain types in which they occurred are shown in the following table.

Vehicle	Dry-season Condition (60 or 40 RCI) Avg Speed Mph Max	Min	Terrain Type	Wet-season Condition (60 or 40 RCI) Avg Speed Mph Max	Min	Terrain Type	Wet-season Condition (60 or 35 RCI) Avg Speed Mph Max	Min	Terrain Type
Wheeled Vehicles									
M656	27.2		19	27.2		19	27.2		19
		0.1	13		0.1	13,30		0.1	13,30
M54A2	23.5		19	16.4		23	16.4		23
		0.1	13,30,32		0.1	13,30,32		0.1	13,30,32
M520	15.0		19	15.0		19	15.0		19
		3.6	13		3.6	13		1.6	36A
M37B1	31.0		3,17,28, 31,37,52				31.0		3,17,28, 31,37
		0.1	30,32					0.1	30,32
M561	40.0		3,31,37				40.0		3,17,28, 31,37
		0.1	30,32					0.1	30,32
M706	38.3		3,31,37				38.3		3,31,37
		0.1	30,32					0.1	30,32
Tracked Vehicles									
M548	10.6		23	10.6		23	10.6		23
		0.1	13		0.1	13		0.1	13
M113A1	39.0		3,17,28, 31,37				39.0		3,17,28, 31,37
		1.3	13					1.3	13

Vehicle	Dry-season Condition (60 or 40 RCI) Avg Speed Mph Max	Min	Terrain Type	Wet-season Condition (60 or 40 RCI) Avg Speed Mph Max	Min	Terrain Type	Wet-season Condition (60 or 35 RCI) Avg Speed Mph Max	Min	Terrain Type
M116	32.1		3,17,31,37				32.1		3,10,17,22,28,31,37
		0.1	13					0.1	13
M571	27.4		3,17,31,37				27.4		3,17,28,31,37
		2.2	13					2.2	13

The M561 had the highest speed of the wheeled vehicles in both dry- and wet-season conditions, and the M113A1 had the highest speed of the tracked vehicles in both conditions. The M520 and the M548 had the lowest maximum speed in both seasons. Except for the M54A2, each vehicle was able to travel at its same maximum speed regardless of seasonal conditions. Except for the M520, each traveled at its same minimum speed in both seasons; the wet-season condition with 60 or 35 RCI caused the M520 to travel at a lower speed than in the other two seasonal conditions.

68. Terrain type 19 allowed maximum speed for three vehicles in the dry season and for two of the three in the wet season. Types 3, 31, and 37 allowed maximum speed in both seasons for six vehicles; some of the same vehicles also attained maximum speed in types 17 (four vehicles in both seasons), 28 (two vehicles in the dry season and four in the wet), 52 (one vehicle in the dry season), and 22 and 10 (one vehicle in the wet season for both types). Seven vehicles traveled at minimum speed in terrain type 13 in both seasonal conditions. Type 30 was traversed at minimum speed by one of the seven in the wet season and by another of the seven and three additional vehicles in both seasons. Type 32 was traversed at minimum speed by the same four latter vehicles above in both seasons.

69. Seven vehicles, five wheeled and two tracked, had the same minimum speed in one or more of the same terrain types. While terrain type

appeared to be the major factor affecting vehicle speed, seasonal conditions and soil strength apparently did not significantly affect either maximum or minimum speeds, at least for the soil strengths tested in this study. In the wet-season analysis of the first four vehicles tested (see paragraph 3), a special study was made to provide a more comprehensive treatment of the effects of soil strength on performance. The discussions deal with speed, delivery rate, one-pass vehicle cone index, and overall trafficability in the United States and Thailand, and can be found in Appendix C.

Speed within terrain classes

70. The terrain types were grouped into three qualitative classes: vegetation, rice fields, and streams.

71. Vegetation. Vegetation was divided into three sub-classes, based on the percentage of maximum tractive force required to traverse vegetated areas. The sub-classes were: (a) light, 0-25% tractive force required; (b) medium, 26-50%; and (c) heavy, 51-100%. No vegetation in the medium sub-class occurred in the terrain selected for this study.

72. The time expended in traversing areas of light vegetation and the average speed attained were computed for the four vehicles in the first study (fig. 24); there were no immobilizations. The time and speed were not computed in the 1968 study. The speed of the M656 (12.6 mph) and the M54A2 (12.4 mph) was approximately twice that of the M520 (6.6 mph) and the M548 (7.9 mph) because of greater power available beyond 10 mph (see figs. 25a and 25b). The performance of the M520 did not exceed that of the M548 because the M520 is 11 in. wider, and so encountered more vegetation while traversing the terrain; this, in turn, increased the average force requirement. This greater force requirement canceled the advantage of greater available power, so that the speed of the M520 was below that of the M548.

73. Only one terrain type (type 13) was classified as containing heavy vegetation. Again, the time expended in traversing this type and the average speed attained were computed for the four vehicles in the first study (fig. 24). In the 1968 study, they were computed for the M116, the only vehicle tested at that time that became immobilized in heavy vegetation; the other five vehicles could either circumvent or override it. The following tabulation presents the data derived for the vehicles that were

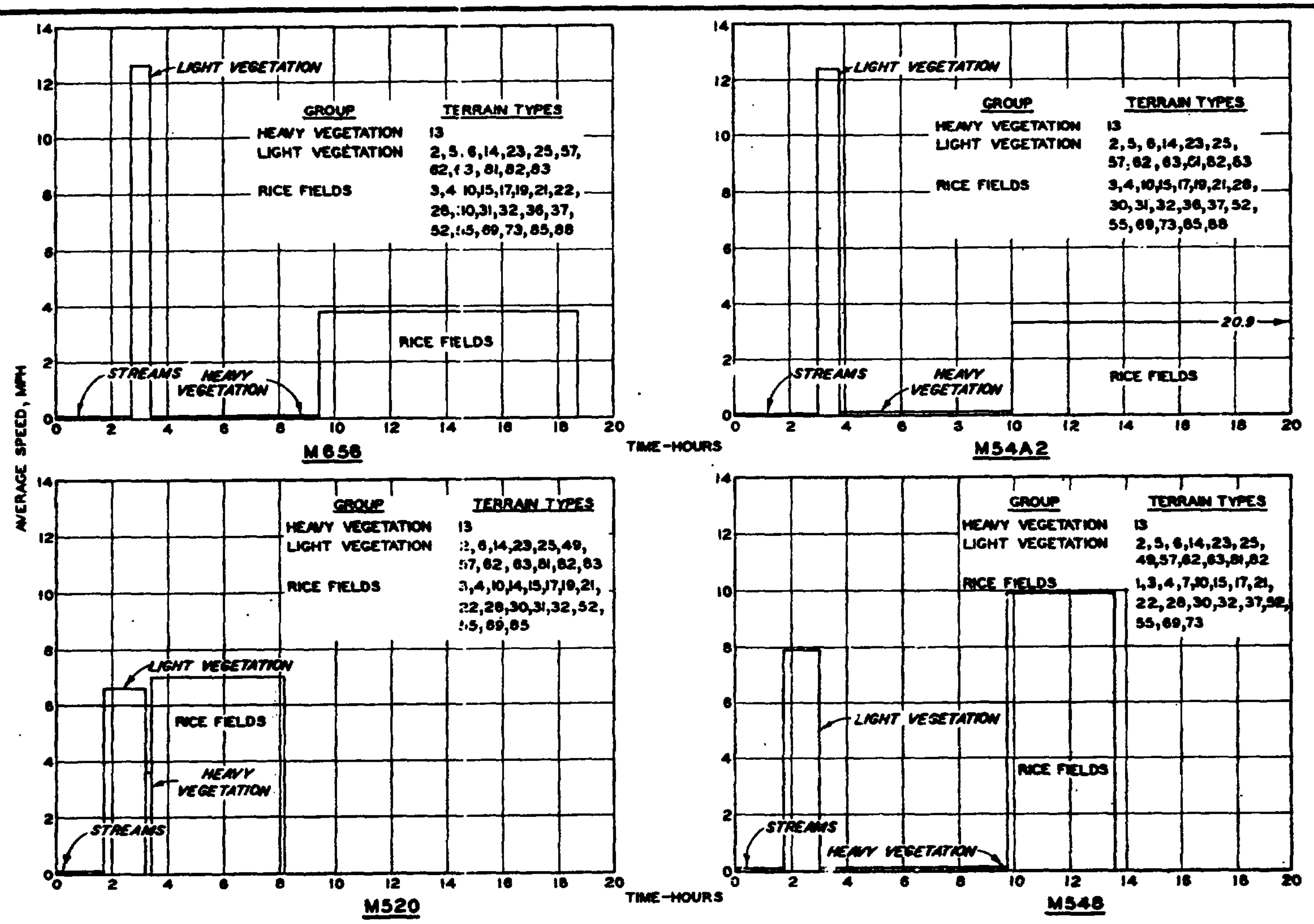


Fig. 24. Comparison of average speed performance and elapsed time for groups of terrain types

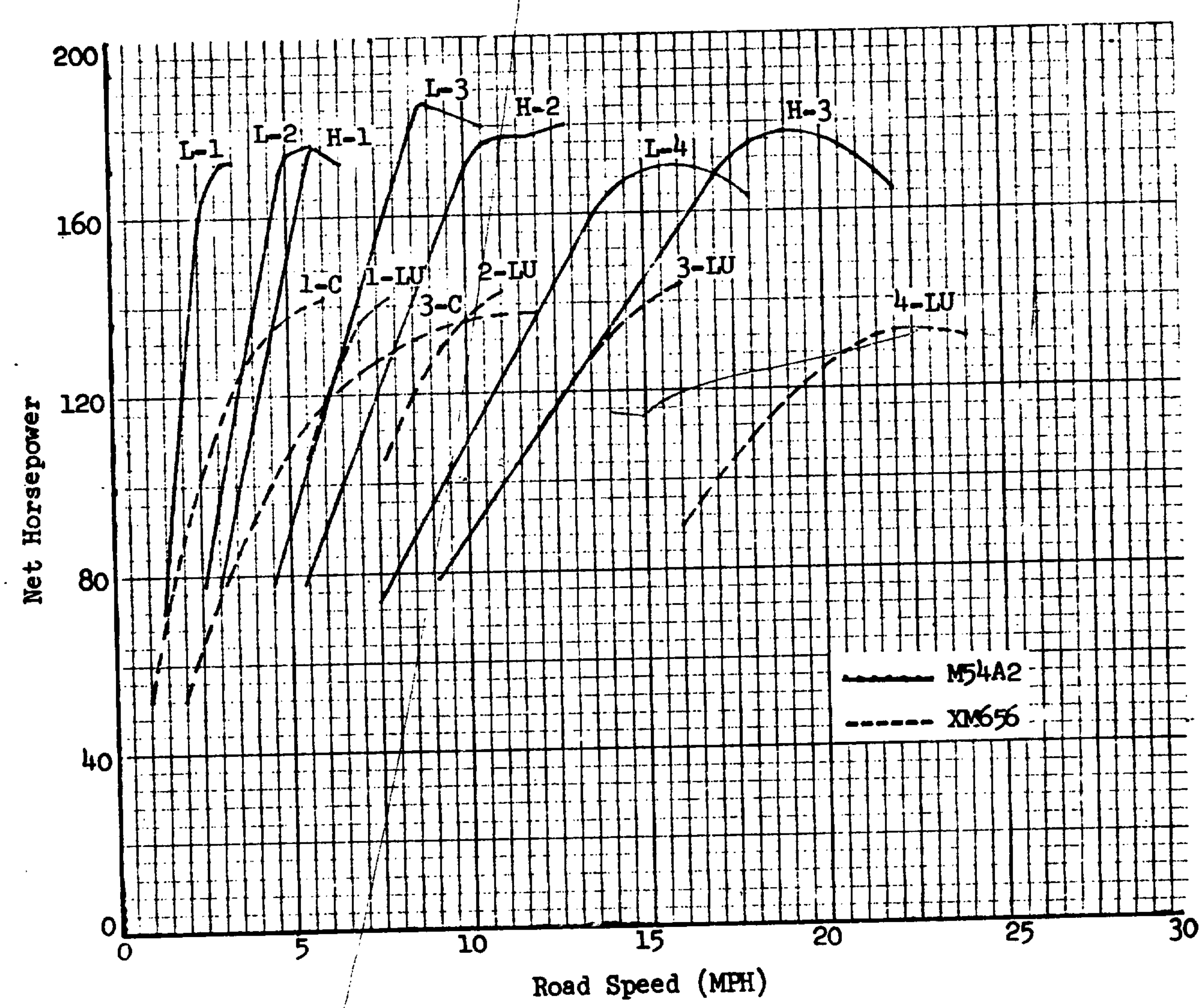


Fig. 25a. Net horsepower-speed performance relations for M656 and M54A2

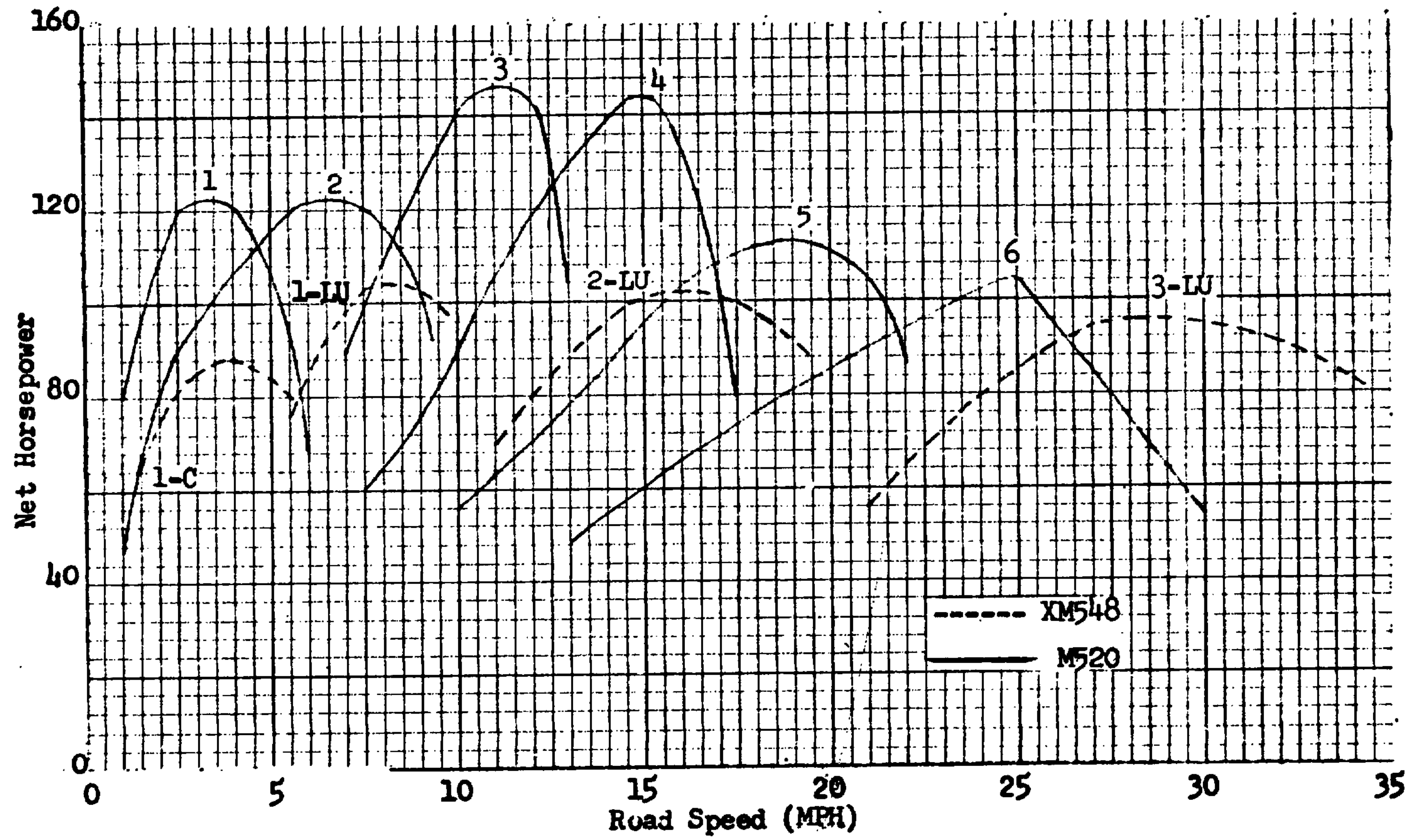


Fig. 25b. Net horsepower-speed performance relations for M520 and M548

immobilized (i.e. suffered time penalties):

Vehicle	Total Distance Ft	No. 5-Min Penalties (See par 44)	Total Time Hr	Avg Speed Mph	Terrain Type Speed*
		Dry Season (60 or 40 RCI)			
M656	3200	204	17.0	0.04	0.1
M54A2	3300	213	17.8	0.03	0.1
M548	3000	210	17.5	0.03	0.1
M116	3200	174	14.5	0.04	0.1
		Wet Season (60 and 35 RCI)			
M656	3300	210	17.5	0.04	0.1
M54A2	3000	194	16.2	0.04	0.1
M548	3000	210	17.5	0.03	0.1
M116	3200	174	14.5	0.04	0.1

*Predicted speed in each areal terrain type was rounded to nearest tenth of a mile per hour to: (a) avoid vehicle immobilization and (b) be consistent with other predicted speeds.

74. The M520 was not immobilized in heavy vegetation and so could maintain a 3.6-mph speed, as opposed to 0.1-mph speed for the other vehicles. This superior performance was due in part to greater available power in the 0-3 mph range. Also significant was the higher leading edge (50 in.) of the vehicle, which reduced the average force required for vegetation override. The leading edge of the M520 can withstand an impact force 1.5 times larger than that of the M656 and the M54A2, and 3 times larger than that of the M548 (see tables 1 and 2). The M520 weighs approximately 1.3 times more than the M54A2, and 1.6 times more than the M656 and the M548. This added weight provided a substantially greater kinetic energy that could be utilized in overcoming peak force demands.

75. The M548 tracked vehicle would be superior to the M520 (see fig. 26a) if it were not for the heavy vegetation, which covered 3200-3900 ft, or 1.3-1.6 percent of the total distance traversed. This fact emphasizes that the distribution of critical terrain conditions can be extremely significant to cross-country vehicle travel, although it is often overlooked because a

particular terrain feature that occurs infrequently can easily go unnoticed on small-scale maps unless each terrain-vehicle interaction is examined in detail.

76. Rice fields. Approximately 70 percent of the travel time on the route was spent in rice fields (paragraph 43). The time required to traverse rice fields and the average speed attained were computed only for the four vehicles in the first study (fig. 24) and for the vehicles in the 1968 study that became immobilized. The following tabulation presents the data derived for the vehicles that were immobilized:

Vehicle	Dike Spacing Ft	Total Distance Ft	No. 20-Min Penalties (See par 41)	Total Time Hr	Avg Speed Mph	Terrain Type Speed*
		Dry Season (60 or 40 RCI)				
M656	100	3700	37	12.3	0.06	0.1
M54A2	100	3300	33	11.0	0.06	0.1
M37B1	100	3800	38	12.7	0.06	0.1
M561	100	3300	33	11.0	0.06	0.1
M706	100	3400	34	11.3	0.06	0.1
		Wet Season (60 or 35 RCI)				
M656	100	5000	50	16.7	0.06	0.1
M54A2	100	7900	79	26.3	0.06	0.1
M37B1	100	5500	55	18.3	0.06	0.1
M561	100	3100	31	10.3	0.06	0.1
M706	100	3700	37	12.3	0.06	0.1

*Predicted speed in each areal terrain type was rounded to nearest positive tenth of a mile per hour to: (a) avoid vehicle immobilization and (b) be consistent with other predicted speeds.

77. The performance of the wheeled vehicles in rice fields could be judged almost entirely on undercarriage clearance. This was particularly significant for those terrains characterized by dikes 18-30 in. high. Undercarriage clearance was not a consideration for the tracked vehicles, and these vehicles were not immobilized; their better performance was due in part to their superior dynamic response characteristics.

78. The M520 was the only wheeled vehicle that was not immobilized. Its larger diameter tires (71.1 in.) provided it with a 30-in. undercarriage clearance, compared to 20 in. for the M656, 21 in. for the M54A2, 16 in. for the M37B1, 15 in. for the M561, and 23 in. for the M706. The M520 was designed, however, with no suspension system, and induced vibratory motions are compensated only within the limits of the spring and damping properties of its pneumatic tires. So, in spite of its large power output, the M520 was unable to perform as well as the tracked vehicles.

79. Streams. The number of streams crossed and the time penalties assessed for all the vehicles are shown in the following tabulation:

	Dry Season (60 or 40 RCI)				Wet Season (60 or 35 RCI)			
Vehicle	No. Streams Crossed	No. Penalties 17-Sec	No. Penalties 1200-Sec	Total Penalty Time Sec	No. Streams Crossed	No. Penalties 17-Sec	No. Penalties 1200-Sec	Total Penalty Time Sec
M656	11	3	8	9651	10	3	7	8451
M54A2	11	2	9	10834	9	1	8	9617
M520	10	5	5	6085	9	1	8	9617
M37B1	8	4	4	4868	8	2	6	7234
M561	9	5	4	4885	8	3	5	6051
M706	8	2	6	7234	8	2	6	7234
M548	8	3	5	6051	9	2	7	8434
M113A1	8	4	4	4868	8	2	6	7234
M116	9	6	3	3702	9	6	3	3702
M571	9	7	2	2519	9	7	2	2519

80. As stated in paragraph 30, new routes were chosen for all vehicles in the wet season in an attempt to reduce the number of 1200-sec penalties for crossing streams; however, reductions in the number of penalties only occurred for a few vehicles. The number of streams crossed in the wet season was reduced for the M656, M54A2, M520 and M561; no change occurred for the M37B1, M706, M113A1, M116, and M571; and the number was increased for the M548. The number of 17-sec penalties assigned in the wet season decreased over the dry season for the M54A2, M520, M37B1, M548, M113A1, and M561, and no change occurred for the M656, M706, M116, and M571. There was a decrease in the number of 1200-sec penalties assigned in the wet season for the M656, M54A2; no change

in the number of penalties for the M706, M116, and M571; and the number of penalties increased for the M520, M37B1, M548, M113A1, and M561.

81. Summary. While penalties were a major factor in determining the performance of the vehicles within terrain classes, no relations were established between the number of penalties assessed in particular terrain classes and the average speed the vehicles could attain in crossing them. Other factors had to be considered, e.g. the time involved when a vehicle was routed over a longer segment of the route, or the ability of some vehicles to maneuver in certain terrain classes better than other vehicles could.

Average traverse speed for route

82. The traverse distances and the average speed of each vehicle listed below were taken from table 4. The path elongations were computed in each case by dividing the traverse distance by the center-line distance (44.8 miles for all vehicles in all seasonal conditions).

	Dry Season (60 or 40 RCI)			Wet Season (60 or 40 RCI)			Wet Season (60 or 35 RCI)		
Vehicle	Traverse Distance miles	Path Elongation	Average Traverse Speed mph	Traverse Distance miles	Path Elongation	Average Traverse Speed mph	Traverse Distance miles	Elongation	Average Traverse Speed mph
M656	44.9	1.00	2.4	47.4	1.06	2.2	47.4	1.06	2.2
M54A2	46.0	1.03	2.2	48.6	1.08	1.7	48.6	1.08	1.7
M520	44.9	1.00	5.5	44.6	1.00	4.8	44.6	1.00	3.9
M37B1	46.7	1.04	3.1				47.7	1.06	2.5
M561	46.3	1.03	4.2				45.7	1.02	4.2
M706	46.3	1.03	3.9				46.1	1.03	3.7
M548	[illegible]	1.01	3.7	45.6	1.02	3.5	45.6	1.02	3.4
M113A1	46.3	1.03	9.0				45.4	1.01	7.3
M116	45.8	1.02	4.6				45.9	1.02	4.2
M571	46.0	1.03	8.7				46.9	1.05	8.5

83. The maximum difference in traverse distances in the dry season was 1.7 miles; in the wet season the maximum difference was 4.0 miles, regardless of the soil strength combinations considered.

84. The comparative traverse performances for all the vehicles are portrayed in figs. 26a and 26b in terms of cumulative time. Examples of

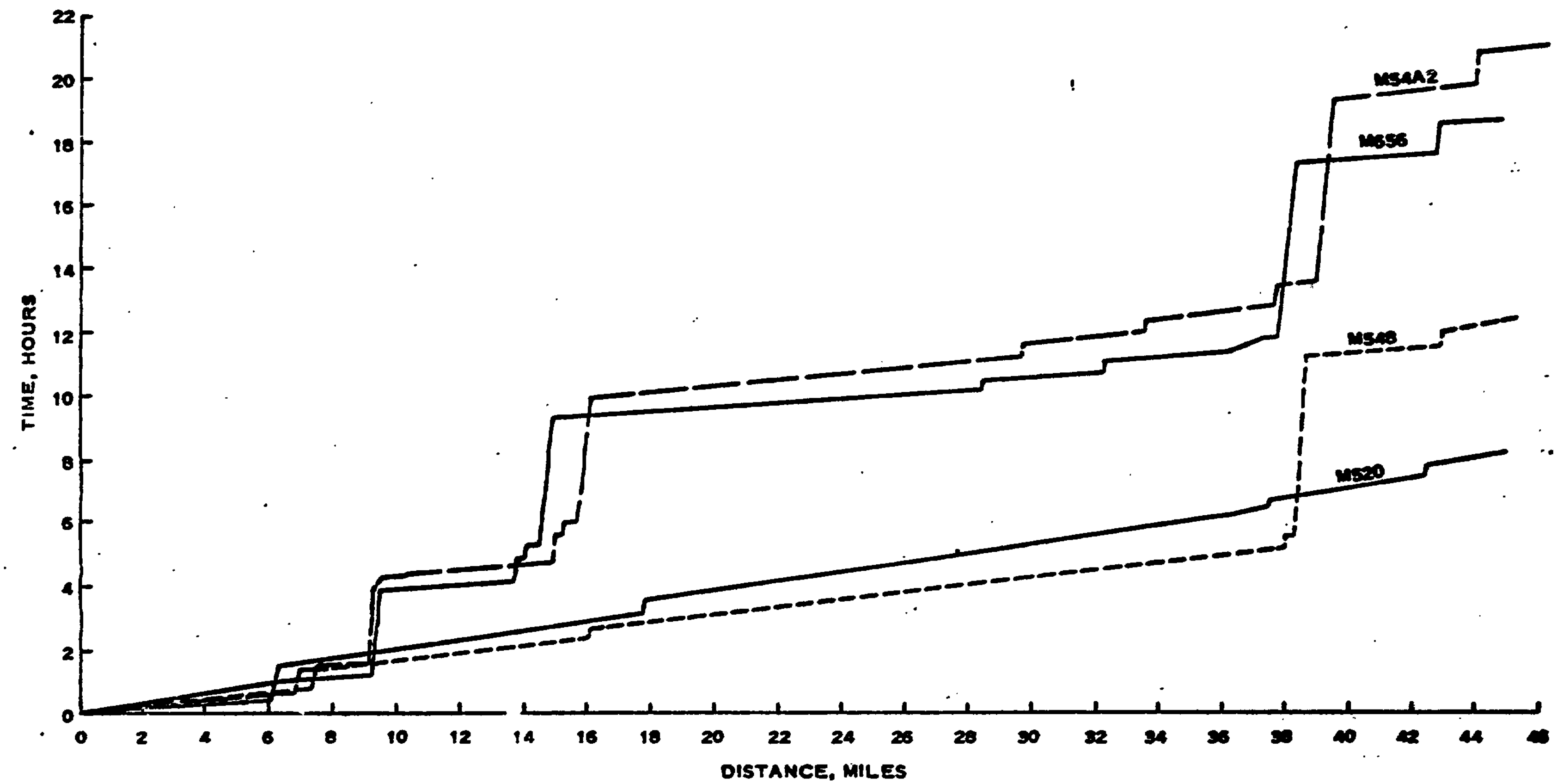


Fig. 26a. Cumulative time-distance (dry season) for M54A2, M656, M548, and M520

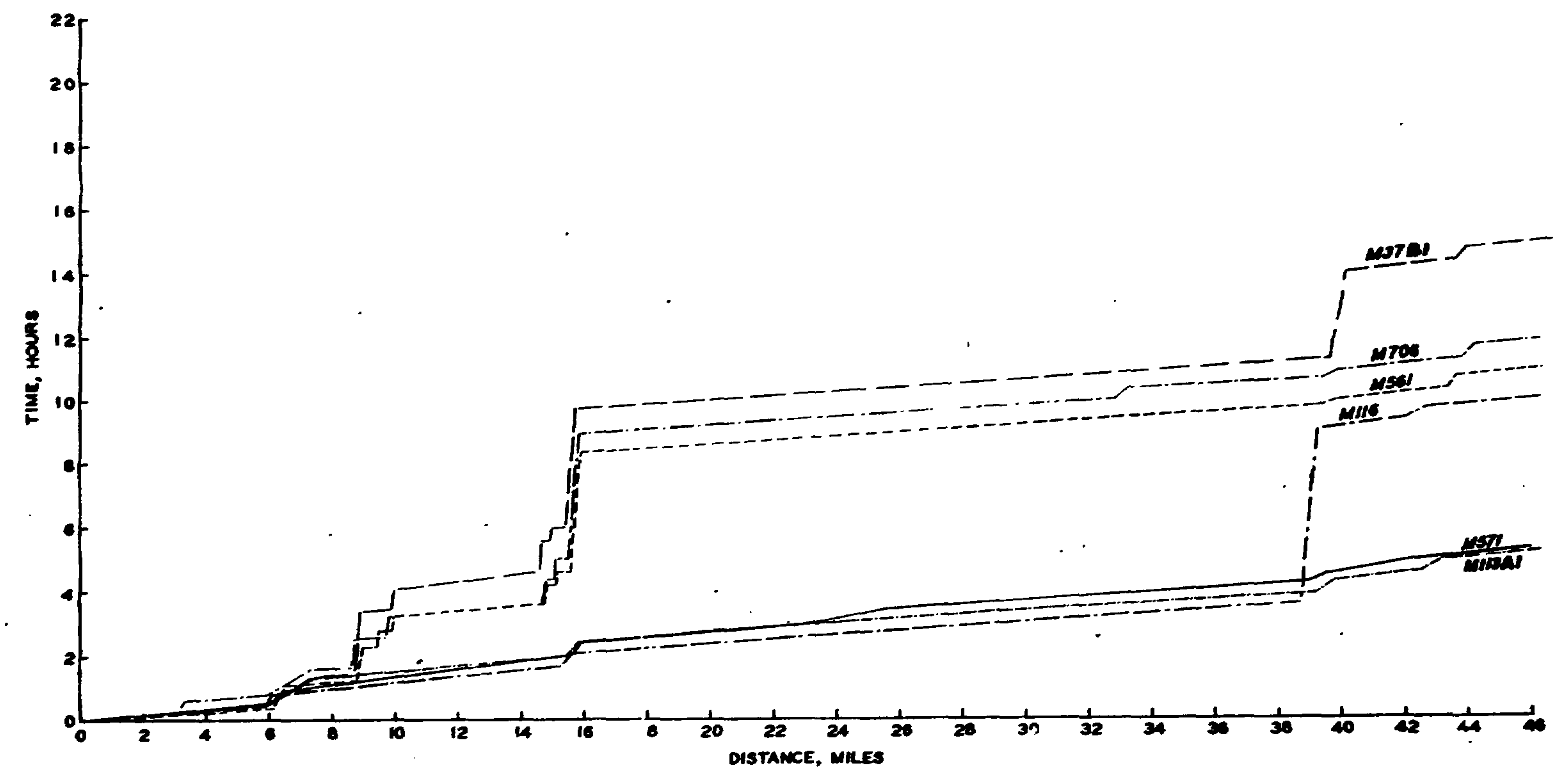


Fig. 26b. Cumulative time-distance (dry season) for M37B1, M706, M561, M116, M571, and M113A1

similar comparative traverse performances for the M37B1, M706, M561, M116, M113A1, and M571 are portrayed in fig. 26c for the wet-season condition. The short vertical discontinuities in each line represent stream crossings where time penalties were imposed because of immobilization. The longer vertical discontinuities represent time penalties assessed in rice fields where dikes were 18-30 in. high. A steady increase in time between approximately 16 and 38 miles reflects the better performance of all vehicles in light vegetation and rice fields characterized by dikes less than 18 in. high. The sharp increase in time accumulation by the M656, M54A2, M37B1, M548, and M116 at mile 38-39 was due to time penalties imposed for negotiating heavy vegetation.

85. All the vehicles had higher speeds in the dry season than in the wet, except the M561 with the same speed in both seasons. Of the wheeled vehicles tested, the M520 had the best average speed for both seasons, and the M54A2 the worst. Of the tracked vehicles, the M113A1 had the best dry-season average speed and the M571 the best wet-season average speed; the M548 had the lowest for both seasons. The greatest reduction in average traverse speeds from the dry to the wet seasons occurred for the M113A1 (9.0 to 7.3 mph). Significantly, the M116 had the fastest speed over the first 38 miles in both seasons.

86. Since the one-pass vehicle cone index (VCI_1) for each vehicle was less than 35 (see table 1), none of the vehicles were immobilized because of insufficient soil strength. In the predictions for the two strength combinations for the wet season, the M656 and the M54A2 had the same average speed for both conditions; the M548 was only 0.1 mph slower on the lower soil strength; and the M520 had the greatest reduction (4.8 to 3.9 mph). The reduction in the speed of this latter vehicle is related to the comparatively larger increase in motion resistance that occurs as soil strength is reduced, as shown by the following tabulation. Only four vehicles are listed because they were the only ones tested in both wet-season conditions.

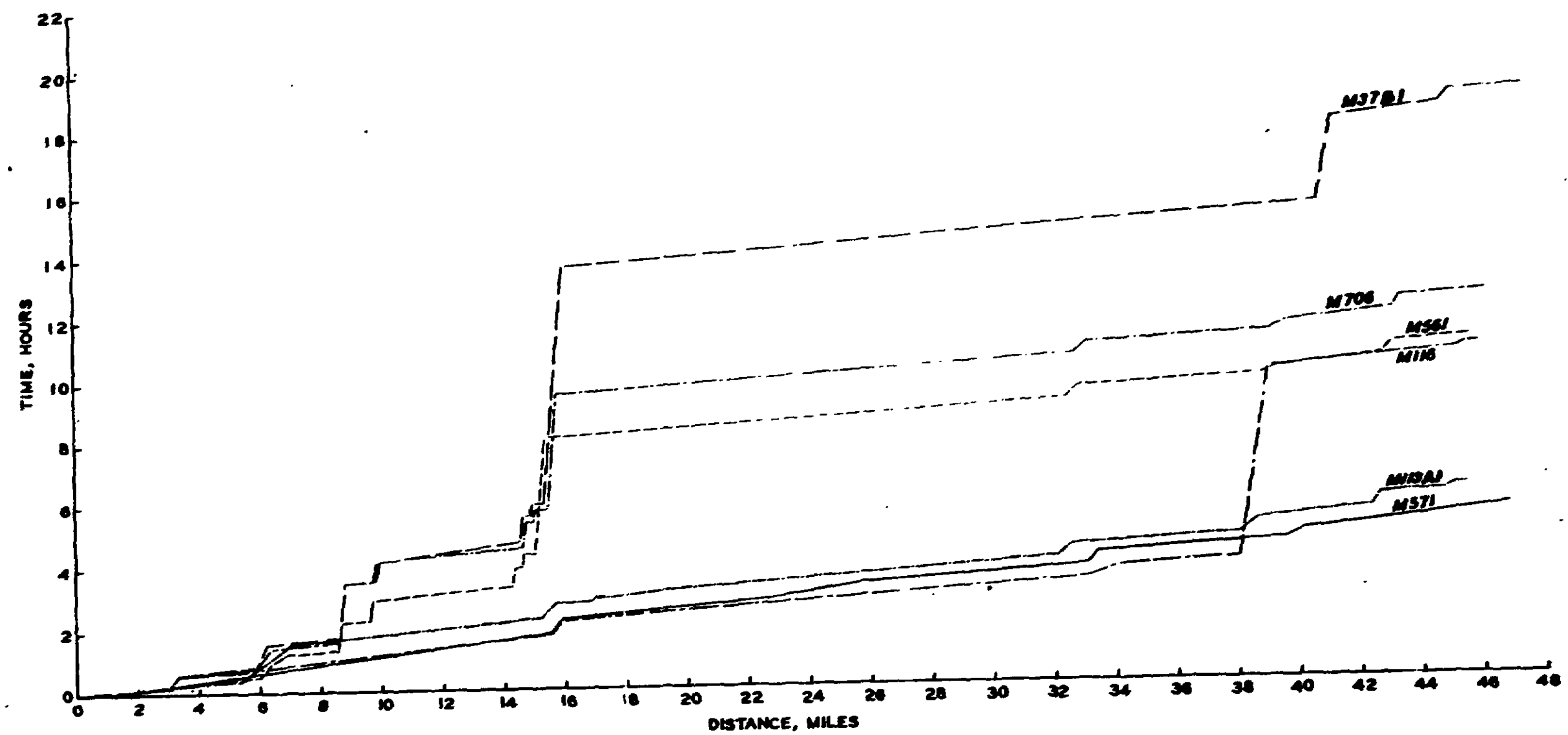


Fig. 26c. Cumulative time-distance (wet season) for M37B1, M706, M561, M116, M571, and M113A1

Vehicle	Motion Resistance, lb 40 RCI	35 RCI
M656	2760	3450
M54A2	2800	3100
M520	4077	8561
M548	2800	3100

Average center-line speed for the route

87. As previously stated, the center-line distance for all the vehicles in all seasonal conditions was 44.8 miles. This center-line distance was divided by the total time required to traverse it to obtain the average center-line speed for each vehicle. The following table presents the data for all the vehicles:

	Dry Season (60 or 40 RCI)		Wet Season (60 or 40 RCI)		Wet Season (60 or 35 RCI)	
Vehicle	Total Time to Complete Traverse, hr	Average Center-Line Speed, mph	Total Time to Complete Traverse, hr	Average Center-Line Speed, mph	Total Time to Complete Traverse, hr	Average Center-line Speed, mph
M656	18.7	2.4	21.6	2.1	21.8	2.1
M54A2	21.0	2.1	29.1	1.5	29.3	1.5
M520	8.2	5.4	9.4	4.8	11.3	4.0
M37B1	14.9	3.0			19.1	2.3
M561	11.0	4.1			11.0	4.1
M706	11.8	3.8			12.4	3.6
M548	12.6	3.7	12.9	3.6	13.3	3.4
M113A1	5.2	8.7			6.2	7.2
M116	10.0	[illegible].5			10.8	4.1
M571	5.3	8.5			5.6	8.1

88. The total time required for each vehicle to complete the traverse in the wet season exceeded the time required for the dry season, except for the M561, whose time was the same for both seasons. Again, of all the wheeled vehicles, the M520 had the highest average speed for both seasons, and the M54A2 the worst. Also, of the tracked vehicles, the M113A1 again had the highest dry-season average speed and the M571 the highest wet-season average speed; the M548 had the lowest speed for both seasons.

Fuel Consumption

89. The average rate and volume of fuel consumed by each vehicle in crossing each terrain type in the route are presented in table 4. The total fuel consumed and the average consumed in dry- and wet-season conditions were as follows:

Vehicle	Dry Season (60 or 40 RCI)			Wet Season (60 or 40 RCI)			Wet Season (60 or 35 RCI)		
	Traverse Distance Miles	Total Fuel Consumed Gal	Average Fuel Consumed Gal/mile	Traverse Distance Miles	Total Fuel Consumed Gal	Average Fuel Consumed Gal/mile	Traverse Distance Miles	Total Fuel Consumed Gal	Average Fuel Consumed Gal/mile
M656	44.9	58.5	1.3	47.4	63.8	1.4	47.4	65.3	1.4
M54A2	46.0	84.4	1.8	48.6	88.1	1.8	48.6	89.2	1.8
M520	44.9	82.3	1.8	44.6	87.1	2.0	44.6	101.4	2.3
M37B1	46.7	38.6	0.8				47.7	43.9	0.9
M561	46.3	35.0	0.8				45.7	31.4	0.7
M706	46.3	65.0	1.4				46.1	61.0	1.3
M548	45.4	91.3	2.0	45.6	102.0	2.2	45.6	102.4	2.2
M113A1	46.3	48.4	1.0				45.4	55.6	1.2
M116	45.8	59.2	1.3				45.9	62.5	1.4
M571	46.0	29.7	0.6				46.9	31.0	0.7

90. In the dry-season analysis, the M571 tracked vehicles had the lowest average fuel consumption, and the M548 tracked vehicle the highest. In the wet season, the M561 wheeled vehicle and the M571 tracked vehicle had the same average fuel consumption, which was also the lowest of all the vehicles; the M548 tracked vehicle and the M520 wheeled vehicle had the highest for the two wet-season conditions, respectively. Significantly, this lowest average was also on the lowest soil strength. The M520 wheeled vehicle had the highest average fuel consumption in the wet season in both strength conditions, even though its traverse distance was the shortest of all the vehicles in both wet-season conditions. The fuel consumption rates for the M656, M520, M37B1, M548, M113A1, M116, and M571 were lower in the dry season, those of the M561 and M706 were lower in the wet season, and those of the M54A2 were the same in both seasons.

Cargo Delivery Rate

91. The cargo delivery rate was obtained by multiplying the average center-line speed and the cargo capacity (payload); the values obtained are given below.

Vehicle	Payload Tons	Dry Season (60 or 40 RCI) Average Center-line Speed Mph	Dry Season (60 or 40 RCI) Delivery Rate Ton-miles/hr	Wet Season (60 or 40 RCI) Average Center-line Speed Mph	Wet Season (60 or 40 RCI) Delivery Rate Ton-miles/hr	Wet Season (60 or 35 RCI) Average Center-line Speed Mph	Wet Season (60 or 35 RCI) Delivery Rate Ton-miles/hr
M656	5.00	2.4	12.0	2.1	10.5	2.1	10.5
M54A2	5.00	2.1	10.5	1.5	7.5	1.5	7.5
M520	8.00	5.4	43.2	4.8	38.4	4.0	32.0
M37B1	0.75	3.0	2.2			2.3	1.7
M561	1.25	4.1	5.1			4.1	5.1
M706	1.00	3.8	3.8			3.6	3.6
M548	6.00	3.7	22.2	3.6	21.6	3.4	20.6
M113A1	1.93	8.7	16.8			7.2	13.9
M116	1.50	4.5	6.8			4.1	6.2
M571	1.00	8.5	8.5			8.1	8.1

92. As would be expected, the M520 with the largest cargo capacity and fastest center-line speed had the highest delivery rate in all conditions, and the M37B1 with the smallest capacity and less than average speed (of all the vehicles) had the lowest delivery rate in both dry- and wet-season conditions. Both are wheeled vehicles. Of the tracked vehicles, the M548 had the highest cargo delivery rate and the M116 the lowest in both seasons. All the vehicles had higher delivery rates in the dry season than in the wet, except the M561, whose delivery rate was the same in both seasons.

Summary of Vehicle Evaluations

93. The performance of each vehicle was evaluated in terms of average

speed over the traverse and the center line, average fuel consumed over the traverse, and center-line cargo delivery rate. Values of these criteria are summarized below.

Vehicle	Average Traverse Speed mph	Average Center-line Speed, mph	Average Fuel Consumed Over Traverse gal/mile	Center-line Delivery Rate ton-miles/hr
		Dry Season (60 or 40 RCI)		
M656	2.4	2.4	1.3	12.0
M54A2	2.2	2.1	1.8	10.5
M520	5.5	5.4	1.8	43.2
M37B1	3.1	3.0	0.8	2.2
M561	4.2	4.1	0.8	5.1
M706	3.9	3.8	1.4	3.8
M548	3.7	3.7	2.0	22.2
M113A1	9.0	8.7	1.0	16.8
M116	4.6	4.5	1.3	6.8
M571	8.7	8.5	0.6	8.5
		Wet Season (60 or 40 RCI)		
M656	2.2	2.1	1.4	10.5
M54A2	1.7	1.5	1.8	7.5
M520	4.8	4.8	2.0	38.4
M548	3.5	3.6	2.2	21.6
		Wet Season (60 or 35 RCI)		
M656	2.2	2.1	1.4	10.5
M54A2	1.7	1.5	1.8	7.5
M520	3.9	4.0	2.3	32.0
M37B1	2.5	2.3	0.9	1.7
M561	4.2	4.1	0.7	5.1
M706	3.7	3.6	1.3	3.6
M548	3.4	3.4	2.2	20.6
M113A1	7.3	7.2	1.2	13.9
M116	4.2	4.1	1.4	6.2
M571	8.5	8.1	0.7	8.1

94. The M113A1 had the highest average traverse and center-line speeds in the dry season, and the M571 had the highest speeds in the wet. The M54A2 had the lowest traverse and center-line speeds in both seasons. The M571 consumed less fuel on the average in the dry season, and the M561 and M571 consumed the least in the wet. The M548 consumed the most in the dry season and the 60 or 40 RCI wet season; the M520 the most in the 60 or 35 RCI wet season. The M520 had the highest delivery rate in both seasons and the M37B1 the lowest.

PART IV: CONCLUSIONS AND RECOMMENDATIONS

Conclusions

95. Based on the results reported herein, the following conclusions are drawn:

- a. The WES analytical model was used successfully to evaluate the off-road mobility performance of the vehicles in this study over the selected terrain.
- b. Soil strength was not as significant as other terrain factors in evaluating the vehicles over the selected terrain; no vehicles were immobilized because of soil strength.
- c. A vehicle can perform well in one set of terrain conditions, but it will suffer penalties in another; thus, no one vehicle provided optimum mobility in all ranges of terrain conditions. Further, neither wheels nor tracks appeared to result consistently in better performance; wheeled vehicles performed better in some circumstances, and tracked performed better in others.
- d. Wet-season conditions usually reduced vehicle performance, as evidenced by (1) the reduction in average traverse speed of all the vehicles, except the M561; (2) the reduction in average center-line speed of all the vehicles, except the M561; (3) the increase in average fuel consumption for all the vehicles, except the M561, M706, and M54A2; and (4) the decrease in cargo delivery rates for all the vehicles, except the M561.

Recommendations

96. It is recommended that:

- a. The WES analytical model be refined as required to make it even more useful.
- b. The mission environment for any new vehicle be defined in quantitative terms before the new vehicle is developed.

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Table 1

Summary of Vehicle Characteristics and Performance Data for Wheeled Vehicles

Characteristics	M656	Source* of Data	M54A2	Source of Data	M520	Source of Data	M37B1	Source of Data	M561	Source of Data	M776	Source of Data
1. Vehicle cone index (one-pass)	23	WES	27	WES	30	WES	24	WES	17	WES	23	WES
2. Cross-country gross weight, fully equipped plus payload and personnel												
a. Axle loads (front to rear), lb												
(1) No. 1							3400	TACOM	5170	WES	7600	WES
(2) No. 2							4350	TACOM	5170	WES	8650	WES
(3) No. 3							--	--	--	--	--	--
b. Total gross weight, lb	27,600	TACOM	30,915	TACOM	40,768	TACOM	7750	TACOM	10,340	TACOM	16,250	TACOM
c. Payload, tons	5.00	TACOM	5.00	TACOM	8.00	TACOM	0.75	TACOM	1.25	TACOM	1.0	TACOM
3. Dimensions, in.												
a. Overall length (including winch if available)	296.8	TACOM	314.2	TACOM	378.5	TACOM	189.4	TACOM	229.75	APG	224	APG
b. Wheelbase	177	TACOM	179	TACOM	235	TACOM	112.0	TACOM	164.[illegible]	APG	105	APG
c. Height of leading edge	36.0	TACOM	32.0	TACOM	50.0	TACOM	26.0	WES	31.0	APG	52.1	WES
d. Width	96.0	TACOM	97.0	TACOM	108.0	TACOM	72.8	TACOM	84.0	APG	89	APG
e. Distance between wheel center lines							62.0	TACOM	71.0	APG	73.5	APG
f. Distance between axles (front to rear)							NA	NA	164.0	APG	NA	NA
(1) No. 1 - No. 2	58.0	WES	152.0	WES	235.0	WES	112.0	TACOM	79.0	APG	105	APG
(2) No. 2 - No. 3	91.0	WES	52.5	WES	--	--	--	--	85.1	APG	--	--
(3) No. 3 - No. 4	58.0	WES	--	--	--	--	--	--	--	--	--	--
4. Vehicle approach angle, deg	33	APG	37	APG	35	APG	38	TACOM	57°	APG	55	APG
5. Vehicle departure angle, deg	61.5	APG	35	APG	41	APG	32	TACOM	52	APG	53	APG
6. Undercarriage clearance, in.												
a. Axle	12.0	TACOM	10.7	TACOM	24.0	TACOM	11	TACOM	14.6	MRDC	16	WES
b. Interior	20.0	TACOM	21.0	TACOM	30.0	TACOM	16	TACOM	15.1	MRDC	23	WES
7. Force leading edge can withstand, lb	20,000		20,000		30,000		10,000	WES	10,000	TACOM	10,000	WES
8. Winch capacity, lb	20,000		20,000		10,000		7500	TACOM	8,000	TACOM	10,000	APG
9. Water performance characteristics												
a. Fording depth, in.												
(1) Normal fording depth	no limit	TACOM	30	TACOM	no limit	TACOM	30	TACOM	Amphibious	APG	Amphibious	APG
(2) Fording depth with fording kit							79	TACOM	--	--	NA	NA
(3) Fording depth with snorkel kit							NA	NA	--	--	NA	NA
b. Water speed, mph	1.8	APG	--	--	3.3	APG	2	WES	2.05	MRDC	3.2	APG
c. Depth below water line when loaded, in.	71	APG	--	--	63	TACOM	NA	NA	45	TACOM	70	WES

(Continued)

* TACOM - US Army Tank-Automotive Command
WES - US Army Engineer Waterways Experiment Station
NA - Not applicable
APG - Aberdeen Proving Ground
MRDC - Military Research and Development Center

Table 3 (Continued)

Characteristics	M656	Source* of Data	M54A2	Source of Data	M520	Source of Data	M37B1	Source of Data	M561	Source of Data	M706	Source of Data
10. Engine												
a. Make	Continental		Chrysler		Caterpillar		Dodge	WES	GM	APG	Chrysler	APG
b. Model	LDS-465-1		LDS-465		D333TA		T-245	APG	3-53	APG	HT 361	APG
c. Fuel type	Cite		Diesel		Diesel		Gasoline	WES	Cite	APG	Gasoline	APG
d. Brake (BHP) or net (NHP) horsepower	198 NHP		210 BHP		176 NHP		77 BHP	WES	103 BHP	APG	210 BHP	APG
e. Maximum torque, lb-ft							188	TACOM	--	--	--	--
f. Engine RPM at maximum torque							1200	TACOM	--	--	--	--
g. Engine RPM at brake (BHP) or net (NHP) horsepower	2800 NHP		2800 BHP		2200 NHP		3200 BHP	TACOM	2800 BHP	APG	4000 BHP	APG
11. Transmission												
a. Type or model	TX200-6		6352		Caterpillar		T-245-3995	OCE	Chevrolet	TACOM	541	APG
b. Gear ratios							--	--	--	--	--	--
(1) 1st	5.296:1		7.31:1		4.274:1		6.40:1	WES	7.06:1	APG	7.24	CG
(2) 2d	3.810:1		4.09:1		2.463:1		3.09:1	WES	3.58:1	APG	4.33	CG
(3) 3d	2.691:1		2.41:1		1.885:1		1.69:1	WES	1.71:1	APG	2.61	CG
(4) 4th	1.936:1		1.44:1		1.418:1		1.00:1	WES	1.00:1	APG	1.59	CG
(5) 5th	1.390:1		1.00:1		1.087:1		--	--	--	--	1.00	CG
(6) 6th	1.00:1		NA		0.818:1		--	--	--	--	--	--
12. Transfer case												
a. Make or model	DANA		NA		Catepillar		Timken	TACOM	Rockwell std	TACOM	--	--
b. Gear ratios							--	--	--	--	--	--
(1) High	1.036:1		1.000:1		--		1:00:1	WES	1.00:1	TACOM	1.32 1	CG
(2) Low	1.036:1		2.024:1		1.222:1		1.96:1	WES	1.79:1	TACOM	NA	NA
13. Axles												
a. Make or model	Rockwell std		NA		Catepillar		T-245	TACOM	Rockwell std	TACOM	--	--
b. Gear ratios	6.40:1		6.443:1		14.69:1		--	--	--	--	--	--
(1) 1st axle							5.83:1	TACOM	5.57:11	TACOM	6.72:1	CG
(2) 2d axle							--	--	--	--	NA	NA
14. Tire data												
a. Type	Wide base		Military		CC		Mud and snow	APG	Military	APG	Combat	CG
b. Size	16:00x20	TACOM	11:00x20	TACOM	18:00x33	TACOM	9:00x16	APG	11:00x18	APG	14:00x20	TACOM
c. Ply	10	TACOM	12	TACOM	10	TACOM	8	APG	4	APG	36	TACOM
d. Tread design	***NDCC		NDCC		Mod tra		**NDMS	APG	NDCC	APG	Self-cleaning	APG
e. Tread depth, in.	15.4		11.8		21.2		1	WES	1	APG	1.5	WES

(Continued)

* OCE - Office Chief of Engineers
CG - Cadillac Gage
** NDMS - Nondirectional mud and snow
***NDCC - Nondirectional cross-country

Table 1 (Concluded)

Characteristics	M656	Source* of Data	M54A2	Source of Data	M520	Source of Data	M37B1	Source of Data	M561	Source of Data	M706	Source of Data
f. Unloaded diameter (including tread), in.	43.6		43.6		71.1		35.8	TACOM	40.0	TACOM	49.5	TACOM
g. Unloaded width, in.							10.2	TACOM	12.0	TACOM	14.75	TACOM
h. No. of tires	8		10		4		4	TACOM	6	TACOM	4	TACOM
i. No. of wheels (duals as one)	8		6		4		0	TACOM	6	TACOM	4	TACOM
j. Cross-country inflation pressure (CCP), psi	10-15		15		25		14	WES	12	APG	--	--
k. Cross-country tire deflection,%	27		25		25		25	TACOM	25	WES	25	WES
l. Highway inflation pressure, psi							40	OC	22	APG	45	TACOM
15. Steering data												
a. Turning radius (curb to curb), ft	--	--	--	--	25.3		25	OC	35.24	APG	24.5	APG
b. Maximum steering angle, deg	29.0		29.0		60.0		NA	NA	13.55	WES	NA	NA
c. Time required to steer from straight ahead position to full lock turn, sec	2.8		2.8		2.8		3	WES	2.3	WES	3	WES
d. Distance from front wheel steering pivot (hub) pivot to front of vehicle, in.							35.62	WES	19.7	WES	4.96	WES
e. Distance from front wheel steering pivto (hub) to outside of vehicle, in.							10.0	WES	12.7	WES	0.65	WES
16. Articulated characteristics												
a. Distance from leading edge to articulated joint, in.	--	--	--	--	45.0		NA	NA	118	APG	NA	NA
b. Maximum pitch angle, deg	--	--	--	--	--	--	NA	NA	40	APG	NA	NA
c. Maximum roll angle, deg							NA	NA	30	APG	NA	NA
d. Maximum yaw angle, deg	--	--	--	--	60.0	--	NA	NA	--	--	NA	NA
17. Center of gravity location, in.												
a. Horizontal distance from front axle	82.0		135.0		81.2		63	TACOM	90.1	TACOM	57.75	APG
b. Vertical distance above ground at full load static position	36.0		54.0		46.5		34	TACOM	36.2	TACOM	41.875	APG

* OC - Army Ordnance Corps

Table 2

Summary of Vehicle Characteristics and Performance Data for Tracked Vehicles

Characteristics	M548	Source of Data*	M113A1	Source of Data	M116	Source of Data	M571	Source of Data
1. Vehicle cone index (one-pass)	25	WES	20	WES	12	WES	11	WES
2. Cross-country gross weight, fully equipped plus payload and personnel								
a. Track								
(1) Left 1st unit, lb			11,900	WES	5,300	WES	2063.5	WES
2d Unit, lb			--	--	--	--	2063.5	WES
(2) Right 1st unit, lb			11,900	WES	5,300	WES	1936.5	WES
2d Unit, lb			--	--	--	--	1936.5	WES
b. Total gross weight, lb	27,041	TACOM	23,800	APG	10,600	TACOM	8,000	TACOM
c. Cross-country payload, ton	6.00		1.93	TACOM	1.5	--	1	TACOM
3. Dimensions								
a. Overall length, in.	226.5		191.5	TACOM	181.0	TACOM	234.0	TACOM
b. Height of leading edge, in.	40		23.0	TACOM	60.0	PCFC	26.0	TACOM
c. Width of vehicle, in.	105.5	TACOM	105.75	TACOM	82.0	PCFC	64.5	TACOM
d. Horizontal distance from leading edge to front sprocket of vehicle, in.	25.0		14.0	TACOM	15.5	PCFC	5.0	TACOM

* WES - U.S. Army Engineer Waterways Experiment Station
APG - Aberdeen Proving Ground
TACOM - U. S. Army Tank-Automotive Command
PCFC - Pacific Car and Foundry

Table 2 (Continued)

Characteristics	M548	Source of Data	M113A1	Source of Data	M116	Source of Data	M571	Source of Data
4. Approach angle, deg	57.0	APG	70	TACOM	75.0	TACOM	78.0	APG
5. Departure angle, deg	35.0	APG	40	TACOM	60.0	TACOM	41.0	APG
6. Ground clearance of hull between tracks, in.	16.0	APG	16	TACOM	14.0	TACOM	12.0	TACOM
7. Force leading edge can withstand, lb	10,000		no limit	WES	5,000	PCFC	3,000	TACOM
8. Winch capacity, lb	--	--	NA*	NA	5,000	PCFC	3,200	TACOM
9. Water performance characteristics								
a. Fording depth, normal fording, in.	no limit	TACOM	amphibi-ous	TACOM	amphibi-ous	TACOM	amphibi-ous	APG
b. Water speed, mph	3.5	APG	3.0	APG	4.2	TACOM	1.7	APG
c. Depth below water line when loaded, in.	66	APG	~~16.0~~ 54.0	WES	56.0	WES	45.0	APG
10. Engine								
a. Make	GM Diesel		GM Diesel	TACOM	Chevro-let	TACOM	Chevro-let	TACOM
b. Model	6V-M3		6V-53	TACOM	2B3V8	TACOM	Corvair	TACOM
c. Fuel type	Diesel		Diesel	TACOM	Gas	TACOM	Gas	TACOM
d. Brake (BHP) or net (NHP) horsepower	202 NHP		202 NHP	TACOM	160 BHP	TACOM	86.0 BHP	TACOM
e. Engine RPM at brake (BHP) or net (NHP) horsepower	2800 NHP		2800 NHP	TACOM	4600 BHP	TACOM	3600 BHP	TACOM

(Continued)

* NA - Not applicable

Table 2 (Continued)

Characteristics	M548	Source of Data	M113A1	Source of Data	M116	Source of Data	M571	Source of Data
11. Transmission								
a. Model	--	--	TX-100-1	TACOM	305MC	TACOM	DAMA	TACOM
b. Ratios								
(1) 1st	3.81:1		3.81:1	APG	4.09:1	TACOM	3.79:1	TACOM
(2) 2d	1.93:1		1.93:1	APG	2.63:1	TACOM	2.21:1	TACOM
(3) 3d	1.00:1		1.00:1	APG	1.55:1	TACOM	1.35:1	TACOM
(4) 4th	--	--	--	--	1.00:1	TACOM	1.07:1	TACOM
(5) 5th	--	--	--	--	--	--	--	--
(6) 6th	--	--	--	--	--	--	--	--
12. Transfer case								
a. Model	TX-100-1		--	--	--	--	--	--
b. Ratios								
(1) High	1:1		0.778:1	APG	1.52:1	TACOM	3.04:1	APG
(2) Low	13.31:1		--	--	NA	NA	1.00:1	APG
13. Final drive								
a. Type	--	--	--	--	WG/GS-100-1	TACOM	--	--
b. Ratio	4.31:1		3.93:1	TACOM	4.17:1	TACOM	3.89:1	TACOM
14. Track data								
a. Length of track in contact with ground, in.								
(1) 1st unit	111.0		105.0	APG	103.0	APG	52.0	APG
(2) 2d unit	--	--	--	--	NA	NA	52.0	APG

(Continued)

(3 of 5 sheets)

Table 2 (Continued)

Characteristics	M548	Source of Data	M113A1	Source of Data	M116	Source of Data	M571	Source of Data
b. Width of track, in	15.0		15.0	WES	20.0	TACOM	18.0	APG
c. Grouser height, in.	<1.5		<1.5	WES	<1.5	WES	<1.5	WES
d. Total number of bogies in contact with ground	10		10	WES	10	TACOM	16	APG
e. Area of one track shoe, sq in.	90.0		90.0	WES	80.0	TACOM	85.5	APG
f. No. of tracks	2		2	WES	2	TACOM	4	APG
15. Steering data								
a. Turning radius at a forward speed determined from point at center of outside track, ft	14.0		12.7	TACOM	11.0	PCFC	40.1	APG
b. Horizontal distance from leading edge of vehicle to midpoint of track in contact with ground, in.	107.4		92.25	TACOM	91.0	TACOM	57.0	WES
c. Width of track, in.	15.0		15.0	TACOM	20.0	TACOM	18.0	APG
16. Articulated characteristics								
a. Distance from leading edge of vehicle to articulated joint, in.	--	--	NA	NA	NA	NA	111.0	APG
b. Maximum pitch angle, deg	--	--	NA	NA	NA	NA	+32.0	TACOM
c. Maximum roll angle, deg			NA	NA	NA	NA	NA	NA
d. Maximum yaw angle, deg	--	--	NA	NA	NA	NA	64.0	TACOM

(Continued)

Table 2 (Concluded)

Characteristics	M548	Source of Data	M113A1	Source of Data	M116	Source of Data	M571	Source of Data
17. Center of gravity location								
a. Horizontal distance from front sprocket, in.								
Front unit	67.0		78	TACOM	78.25	TACOM	51.0	APG
Rear Unit			—	—	—	—	49.5	APG
b. Vertical distance above bottom of track, in.								
Front	29.0		39	TACOM	31.25	TACOM	28.2	APG
Rear			—	—	—	—	19.1	APG

Table 3

Predicted Vehicle Performance in Kho[illegible]aen Areal Terrain Types

Wheeled Vehicles

Terrain Types	M656 Speed mph	M656 Fuel Consumption gal/mile	M656 Delivery ton-mph	M54A2 Speed mph	M54A2 Fuel Consumption gal/mile	M54A2 Delivery ton-mph	M520 Speed mph	M520 Fuel Consumption gal/mile	M520 Delivery ton-mph	M37B1 Speed mph	M37B1 Fuel Consumption gal/mile	M37B1 Delivery ton-mph	M561 Speed mph	M561 Fuel Consumption gal/mile	M561 Delivery ton-mph	M706 Speed mph	M706 Fuel Consumption gal/mile	M706 Delivery ton-mph
Dry Season (60 or 40 RCI)																		
1	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0	6.8	1.1	5.1	5.6	1.3	7.0	6.6	1.9	6.6
2	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0	10.8	0.7	8.1	13.2	0.5	16.5	13.2	0.9	13.2
3	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6	31.0	0.2	23.3	40.0	0.2	50.0	38.3	0.3	38.3
4	14.1	0.9	70.5	7.8	1.5	39.0	6.5	1.8	52.0	7.0	1.1	5.3	5.6	1.3	7.0	6.4	1.9	6.4
5	25.2	0.4	126.0	16.3	1.0	81.5	7.6	1.5	60.8	20.7	0.3	15.5	36.2	0.2	45.3	33.0	0.4	33.0
6	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4	9.4	0.8	7.1	14.4	0.5	18.0	15.8	0.8	15.8
7	0.1*	3.3	0.5	0.1*	2.8	0.5	2.5	3.6	20.0	0.1*	0.6	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
8	27.2	0.2	136.0	23.5	0.6	117.5	15.0	0.7	120.0	33.7	0.2	25.3	40.0	0.2	50.0	40.0	0.3	43.7
9	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
10	16.2	0.8	81.0	10.0	1.3	50.0	7.2	1.6	57.6	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
11	9.4	1.3	47.0	8.0	1.5	40.0	5.8	2.0	46.4	8.9	0.8	6.7	8.8	0.8	11.0	11.0	1.1	11.0
12	0.1*	2.2	0.5	0.1*	2.3	0.5	6.1	1.9	48.8	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
13	0.1**	3.3	0.5	0.1**	2.6	0.5	3.6	2.9	28.8	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
14	9.0	1.4	45.0	7.6	1.5	38.0	5.7	2.1	45.6	6.5	1.2	4.9	7.4	1.0	9.3	8.8	1.4	8.8
15	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0	9.9	0.8	7.4	9.3	0.8	11.6	9.6	1.3	9.6
16	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0	9.0	0.8	6.8	14.7	0.5	18.4	10.5	1.2	10.5
17	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6	31.0	0.2	23.3	40.0	0.2	50.0	31.0	0.4	31.0
18	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0	10.8	0.7	8.1	13.2	0.5	16.5	13.2	0.9	13.2
19	27.2	0.2	136.0	23.5	0.6	117.5	15.0	0.7	120.0	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
20	20.0	0.6	100.0	13.2	0.9	66.0	12.0	0.9	96.0	11.6	0.6	8.7	36.5	0.2	45.6	12.2	1.0	12.2
21	16.2	0.8	81.0	10.0	1.3	50.0	7.2	1.6	57.6	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
22	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0	9.9	[illegible]	7.4	9.3	0.8	11.6	9.6	1.3	9.6
23	25.2	0.4	126.0	16.4	1.0	82.0	7.8	1.5	62.4	23.7	0.3	17.8	36.5	0.2	45.6	33.7	0.4	33.7
24	9.0	1.4	45.0	7.6	1.5	39.0	5.7	2.1	45.6	6.5	1.2	4.9	7.4	1.0	9.3	8.8	1.3	8.8
25	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4	9.4	0.8	7.1	14.4	0.5	18.0	15.8	0.8	15.8
26	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6	11.6	0.6	8.7	25.2	0.3	31.5	20.6	0.6	20.6
27	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0	9.0	0.8	6.8	14.7	0.5	18.4	10.5	1.2	10.5
28	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6	31.0	0.2	23.3	40.0	0.2	50.0	30.4	0.4	30.4
29	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0	9.0	0.8	6.8	14.7	0.5	18.4	10.5	1.2	10.5
30	0.1*	3.3	0.5	0.1*	2.8	0.5	6.1	1.9	48.8	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
31	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6	31.0	0.2	23.3	40.0	0.2	50.0	38.3	0.3	38.3
32	0.1*	3.3	0.5	0.1*	2.8	0.5	7.0	1.6	56.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
33	16.2	0.8	81.0	11.0	1.1	55.0	7.6	1.5	60.8	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
34	0.1*	3.3	0.5	0.1*	2.8	0.5	7.0	1.7	56.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
35	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6	11.6	0.6	8.7	25.2	0.3	31.5	20.6	0.6	20.6
36	16.2	0.8	81.0	11.0	1.1	55.0	8.2	1.6	65.6	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
37	18.7	0.6	93.5	15.6	1.1	78.0	8.2	1.6	65.6	31.0	0.2	23.3	40.0	0.2	50.0	38.3	0.3	38.3
38	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6	16.0	0.4	17.0	24.6	0.3	30.8	27.4	0.4	27.4
39	19.2	0.8	96.0	16.0	1.1	80.0	9.5	1.5	76.0	27.1	0.2	20.3	28.1	0.3	35.1	35.0	0.4	35.0
40	10.6	1.2	53.0	8.2	1.5	41.0	5.9	2.0	47.2	8.8	0.8	6.6	8.8	0.8	11.0	12.0	1.0	12.0
41	0.1**	3.3	0.5	0.1**	2.8	0.5	3.8	2.8	30.4	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
42	15.3	1.2	76.5	11.4	1.6	57.0	7.2	2.1	57.6	7.7	1.0	5.8	8.9	0.8	11.1	14.2	0.9	14.2
43	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.8	28.8	0.2	6.0	0.2	2.5	3.1	3.1	2.0	6.2	2.0
44	13.8	1.6	69.0	11.6	1.7	58.0	8.2	2.1	65.6	6.2	1.2	4.7	21.5	0.3	26.9	28.9	0.4	28.9
45	0.1**	3.3	0.5	0.1**	2.8	0.5	6.5	2.2	52.0	0.1**	6.0	0.1	2.0	3.8	2.5	1.0	12.3	1.0

Tracked Vehicles

Terrain Types	M548 Speed mph	M548 Fuel Consumption gal/mile	M548 Delivery ton-mph	M113A1 Speed mph	M113A1 Fuel Consumption gal/mile	M113A1 Delivery ton-mph	M116 Speed mph	M116 Fuel Consumption gal/mile	M116 Delivery ton-mph	M571 Speed mph	M571 Fuel Consumption gal/mile	M571 Delivery ton-mph
Dry Season (60 or 40 RCI)												
1	9.2	1.9	55.2	6.7	1.2	12.7	7.0	1.7	10.5	6.2	1.0	6.2
2	9.4	1.8	56.4	12.1	1.1	23.9	11.4	1.2	17.1	12.0	0.5	12.0
3	10.0	1.5	60.0	39.0	0.2	44.0	32.1	0.4	48.2	27.4	0.2	27.4
4	10.0	1.5	60.0	6.8	1.2	12.9	7.0	1.7	10.5	6.2	1.0	6.2
5	10.4	1.3	62.4	12.2	1.1	22.4	29.0	0.5	43.5	15.6	0.4	15.6
6	8.4	2.4	50.4	10.7	1.3	19.5	14.8	0.9	22.2	5.6	1.1	5.6
7	5.3	4.1	31.8	2.1	3.8	4.1	2.2	5.6	3.3	1.6	4.1	1.6
8	26.2	0.4	157.2	25.5	0.7	44.4	32.1	0.4	48.2	23.8	0.3	23.8
9	0.1**	5.9	0.6	1.3	9.2	2.9	0.1**	12.2	0.2	2.2	3.0	2.2
10	10.0	1.5	60.0	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
11	8.4	2.4	50.4	10.6	1.3	18.9	10.6	1.3	15.9	5.6	1.1	5.6
12	8.5	2.3	51.0	4.9	1.5	9.3	5.2	2.4	7.8	4.0	1.5	4.0
13	0.1**	5.9	0.6	1.3	9.2	2.9	0.1**	12.2	0.2	2.2	3.0	2.2
14	6.8	3.3	40.8	9.4	1.4	15.2	8.6	1.6	12.9	5.6	1.1	5.6
15	9.2	1.9	55.2	10.5	0.8	19.1	11.0	1.3	16.5	9.8	0.6	9.8
16	9.2	1.9	55.2	12.6	1.1	21.2	17.2	0.8	25.8	11.2	0.5	11.2
17	10.5	1.2	63.0	39.0	0.2	44.0	32.1	0.4	48.2	27.4	0.2	27.4
18	9.4	1.8	56.4	12.1	1.1	23.9	11.4	1.2	17.1	12.0	0.5	12.0
19	18.2	0.7	109.2	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
20	18.5	0.7	111.0	14.2	0.9	22.4	30.6	0.5	45.9	22.4	0.3	22.4
21	10.0	1.5	60.0	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
22	9.2	1.9	55.2	10.5	0.3	19.1	11.0	1.3	16.5	9.8	0.6	9.8
23	10.6	1.1	63.6	12.2	1.1	26.2	29.5	0.5	44.3	15.5	0.4	15.5
24	6.8	3.3	40.8	9.4	1.4	15.2	8.6	1.6	12.9	5.6	1.1	5.6
25	8.4	2.4	50.4	10.7	1.3	19.5	14.8	0.9	22.2	5.6	1.1	5.6
26	10.0	1.5	60.0	11.6	1.2	21.6	22.8	0.6	34.2	11.5	0.5	11.5
27	9.2	1.9	55.2	12.6	1.1	21.2	17.2	0.8	25.8	11.2	0.5	11.2
28	10.0	1.5	60.0	39.0	0.2	44.0	32.1	0.4	48.2	27.4	0.2	27.4
29	9.2	1.9	55.2	12.6	1.1	21.2	17.2	0.8	25.8	11.2	0.5	11.2
30	8.5	2.3	51.0	4.9	1.5	9.3	5.2	2.4	7.8	4.0	1.5	4.0
31	10.0	1.5	60.0	39.0	0.2	44.0	32.1	0.4	48.2	27.4	0.2	27.4
32	9.9	1.5	59.4	5.0	1.4	9.5	5.2	2.4	7.8	4.1	1.5	4.1
33	10.4	1.3	62.4	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
34	9.4	1.8	56.4	5.0	1.4	9.5	5.2	2.4	7.8	4.1	1.5	4.1
35	10.0	1.5	60.0	11.6	1.2	21.6	22.8	0.6	34.2	11.5	0.5	11.5
36	10.5	1.2	63.0	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
37	10.5	1.2	63.0	39.0	0.2	44.0	32.1	0.4	48.2	27.4	0.2	27.4
38	10.5	1.2	63.0	24.8	0.8	41.7	20.8	0.7	31.2	14.8	0.4	14.8
39	12.1	0.9	72.5	25.0	0.8	49.0	26.8	0.5	40.2	15.3	0.4	15.3
40	7.8	2.7	46.7	10.6	1.3	18.5	10.2	1.4	15.3	5.6	1.1	5.6
41	0.1**	5.9	0.6	1.3	9.2	2.9	0.1**	12.2	0.2	2.2	3.0	2.2
42	7.2	3.0	43.2	8.8	1.6	16.6	10.0	1.4	15.0	5.6	1.1	5.6
43	0.1**	5.9	0.6	1.3	9.2	2.9	0.1**	12.2	0.2	2.2	3.0	2.2
44	10.2	1.4	61.2	20.3	3.7	5.8	7.7	1.6	11.6	4.8	1.3	4.8
45	0.1**	5.9	0.6	1.3	9.2	2.3	0.1**	12.2	0.2	2.2	3.0	2.2

(Continued)

* The vehicle was immobilized on each rice dike. A 20-minute penalty was assessed for each immobilized and included in the speed calculation.

** The size and density of trees required that some trees be cut in order for the vehicle to negotiate the terrain. The speed was computed using a 5-minute penalty for that needed to be cut.

Table 3 (Continued)

Wheeled Vehicles

Terrain Types	M35 Speed mph	M35 Fuel Consumption gal/mile	M35 Delivery ton-mph	M54A2 Speed mph	M54A2 Fuel Consumption gal/mile	M54A2 Delivery ton-mph	M520 Speed mph	M520 Fuel Consumption gal/mile	M520 Delivery ton-mph	M37B1 Speed mph	M37B1 Fuel Consumption gal/mile	M37B1 Delivery ton-mph	M561 Speed mph	M561 Fuel Consumption gal/mile	M561 Delivery ton-mph	M706 Speed mph	M706 Fuel Consumption gal/mile	M706 Delivery ton-mph
46	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8	0.2	6.0	1.2	2.6	3.0	3.3	2.1	5.8	2.1
47	0.1*	3.3	0.5	0.1*	2.8	0.5	7.0	1.6	56.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
48	9.0	1.4	45.0	7.6	1.5	38.0	5.7	2.1	45.6	6.5	1.2	4.9	7.4	1.0	9.3	8.8	1.4	8.8
49	13.2	1.1	66.0	11.6	1.2	58.0	7.4	1.7	59.2	11.2	0.6	8.4	16.3	0.4	20.4	18.6	0.7	18.6
50	13.2	1.1	66.0	11.6	1.2	58.0	7.4	1.7	59.2	11.2	0.6	8.4	16.3	0.4	20.4	18.6	0.7	18.6
51	17.3	1.1	86.5	14.6	1.5	73.0	9.2	1.7	73.6	18.9	0.4	14.2	17.2	0.4	21.5	20.2	0.6	20.2
52	18.3	0.7	91.5	10.0	1.8	50.0	7.2	1.6	64.6	31.0	0.2	23.3	40.0	0.2	50.0	38.3	0.3	38.3
53	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0	10.8	0.7	8.1	13.2	0.5	16.5	13.2	0.9	13.2
54	16.2	0.8	81.0	11.0	1.1	55.0	7.6	1.5	60.8	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
55	15.2	0.8	81.0	10.0	1.3	50.0	7.2	1.6	57.6	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
56	13.[illegible]	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4	9.4	0.8	7.1	14.4	0.5	18.0	15.8	0.8	15.8
57	13.3	1.0	66.5	9.0	1.3	45.0	6.8	1.8	54.4	5.2	1.4	3.9	20.0	0.4	25.0	21.3	0.6	21.3
58	25.2	0.4	126.0	16.4	1.0	82.0	7.6	1.5	62.4	23.7	0.3	17.8	36.5	0.2	45.6	33.7	0.4	33.7
59	0.1*	3.3	0.5	0.1*	2.8	0.5	2.5	3.6	20.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
60	17.6	1.0	88.0	14.8	1.3	74.0	10.2	1.6	81.6	30.8	0.2	23.1	24.1	0.3	30.1	33.1	0.4	33.1
61	18.7	0.8	93.5	15.6	1.1	78.0	3.2	1.6	65.6	16.0	0.4	12.0	24.6	0.3	30.8	27.4	0.4	27.4
62	13.2	1.1	66.0	11.6	1.2	58.0	7.4	1.7	59.2	11.2	0.6	8.4	16.3	0.4	20.4	18.6	0.7	18.6
63	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4	9.4	0.8	7.1	14.4	0.5	18.0	15.8	0.8	15.8
64	25.2	0.4	126.0	16.4	1.0	82.0	7.8	1.5	62.4	23.7	0.3	17.8	36.5	0.2	45.6	33.7	0.4	33.7
65	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0	10.8	0.7	8.1	13.2	0.5	16.5	13.2	0.9	13.2
66	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0	9.0	0.8	6.8	14.7	0.5	18.4	10.5	1.2	10.5
67	9.3	1.4	46.5	7.8	1.6	39.0	5.8	2.0	46.4	6.1	1.2	4.9	7.4	1.0	9.3	9.3	1.3	9.3
68	0.1**	3.3	0.5	0.1**	2.8	0.5	3.8	2.8	30.4	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
69	16.2	0.8	81.0	10.0	1.3	50.0	7.2	1.6	57.6	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
70	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0	10.8	0.7	8.1	13.2	0.5	16.5	13.2	0.9	13.2
71	14.4	1.0	72.0	11.0	1.1	55.0	7.7	1.6	61.6	10.8	0.7	8.1	12.9	0.6	16.1	12.8	1.0	12.8
72	0.1**	3.3	0.5	0.1**	2.8	0.5	3.8	2.8	30.4	0.2	6.0	0.2	2.6	0.3	3.3	2.1	5.8	2.1
73	17.4	0.8	87.0	10.0	1.3	50.0	7.2	1.6	57.6	12.4	0.5	9.3	11.6	0.6	14.5	12.2	1.0	12.2
74	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
75	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.6	[illegible]
76	0.1**	3.3	0.5	0.1**	2.8	0.5	3.8	2.8	30.4	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
77	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.8	28.8	0.2	6.0	0.2	2.5	3.1	3.1	2.0	6.2	2.0
78	9.0	1.4	45.0	7.6	1.5	38.0	5.7	2.1	45.6	6.5	1.2	4.9	7.4	1.0	9.3	8.8	1.4	8.8
79	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4	9.4	0.8	7.1	14.4	0.5	18.0	15.8	0.8	15.8
80	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0	9.0	0.8	6.8	14.7	0.5	18.4	10.5	1.2	10.5
81	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4	9.4	0.8	7.1	14.4	0.5	18.0	15.8	0.8	15.8
82	9.3	1.4	46.5	7.8	1.6	39.0	5.7	2.0	45.6	6.4	1.2	4.8	7.4	1.0	9.3	9.3	1.3	9.3
83	9.1	1.4	45.5	7.6	1.7	38.0	5.7	2.1	45.6	7.8	1.0	5.9	8.1	0.9	10.2	9.5	1.3	9.5
84	19.3	0.7	96.5	16.0	1.1	80.0	10.4	1.4	83.2	28.7	0.2	21.5	30.2	0.2	37.8	34.5	0.4	34.5
85	17.4	0.8	87.0	12.7	0.9	63.5	7.8	1.5	62.4	12.4	0.5	9.3	11.6	0.6	14.5	12.2	1.0	12.2
86	0.1*	3.3	0.5	0.1*	2.8	0.5	8.0	1.4	64.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
87	8.7	1.5	43.5	7.4	1.5	37.0	5.6	2.1	44.8	7.8	1.0	5.9	8.1	0.9	10.1	9.4	1.3	9.4
88	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6	31.0	0.2	23.3	40.0	0.2	50.0	30.4	0.4	30.4
89	8.7	1.5	43.5	7.4	1.5	37.0	5.6	2.1	44.8	7.8	1.0	5.9	8.1	0.9	10.1	9.4	1.3	9.4
90	0.1*	3.3	0.5	0.1*	2.8	0.5	7.0	1.7	56.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1

Tracked Vehicles

Terrain Types	M548 Speed mph	M548 Fuel Consumption gal/mile	M548 Delivery ton-mph	M113A1 Speed mph	M113A1 Fuel Consumption gal/mile	M113A1 Delivery ton-mph	M116 Speed mph	M116 Fuel Consumption gal/mile	M116 Delivery ton-mph	M571 Speed mph	M571 Fuel Consumption gal/mile	M571 Delivery ton-mph
46	0.1**	5.9	0.6	1.3	9.2	2.9	0.1**	12.2	0.2	2.2	3.0	2.2
47	9.9	1.5	59.4	5.0	1.4	9.5	5.2	2.4	7.8	4.1	1.5	4.1
48	6.8	3.3	40.8	9.4	1.4	15.2	8.6	1.6	12.9	5.6	1.1	5.6
49	8.6	2.3	51.6	17.3	0.9	29.0	15.0	0.9	22.5	5.6	1.1	5.6
50	8.6	2.3	51.6	17.3	0.9	29.0	15.0	0.9	22.5	5.6	1.1	5.6
51	9.8	1.6	58.8	23.6	0.9	28.6	15.5	0.9	23.3	5.6	1.1	5.6
52	10.0	1.5	50.0	39.0	0.2	44.0	32.1	0.4	48.2	27.0	0.2	27.2
53	9.4	1.8	56.4	12.1	1.1	23.9	11.4	1.2	17.1	12.0	0.5	12.0
54	10.4	1.3	62.4	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
55	10.0	1.5	60.0	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
56	8.4	2.4	50.4	10.7	1.3	19.5	14.8	0.9	22.2	5.6	1.1	5.6
57	7.8	2.7	46.8	10.8	1.3	19.7	5.4	2.3	8.1	6.6	0.9	6.6
58	10.6	1.1	63.6	12.2	1.1	26.2	29.5	0.5	44.3	15.5	0.4	15.5
59	5.3	4.1	31.8	2.1	3.8	4.1	2.2	5.6	3.3	1.6	4.1	1.6
60	12.4	0.9	74.4	24.0	0.9	46.1	23.2	0.6	34.8	20.2	0.3	20.2
61	10.5	1.2	63.0	24.8	0.8	41.7	20.8	0.7	31.2	14.8	0.4	14.8
62	8.6	2.3	51.6	17.3	0.9	29.0	15.0	0.9	22.5	5.6	1.1	5.6
63	8.4	2.4	50.4	10.7	1.3	19.5	14.8	0.9	22.2	5.6	1.1	5.6
64	10.6	1.1	63.6	12.2	1.1	26.2	29.5	0.5	44.3	15.5	0.4	15.5
65	9.4	1.8	56.4	12.1	1.1	23.9	11.4	1.2	17.1	12.0	0.5	12.0
66	9.2	1.9	55.2	12.6	1.1	21.2	17.2	0.8	25.8	11.2	0.5	11.2
67	6.8	3.3	19.8	9.2	1.5	15.4	8.6	1.6	12.9	5.6	1.1	5.6
68	0.1**	5.9	0.6	1.3	9.2	2.9	0.1**	12.2	0.2	2.2	3.0	2.2
69	10.0	1.5	60.0	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
70	9.4	1.8	56.4	12.1	1.1	23.9	11.4	1.2	17.1	12.0	0.5	12.0
71	9.2	1.9	55.2	15.4	0.9	28.2	11.4	1.2	17.1	11.8	0.5	11.8
72	0.1**	5.9	0.6	1.3	9.2	2.9	0.1**	12.2	0.2	2.2	3.0	2.2
73	10.0	1.5	60.0	12.1	0.5	22.6	13.0	1.1	19.5	11.5	0.5	11.5
74	0.1**	5.9	0.6	1.3	9.2	2.9	0.1**	12.2	0.2	2.2	3.0	2.2
75	0.1**	5.9	0.6	1.3	9.2	2.9	0.1**	12.2	0.2	2.2	3.0	2.2
76	0.1**	5.9	0.6	1.3	9.2	2.9	0.1**	12.2	0.2	2.2	3.0	2.2
77	0.1**	5.9	0.6	1.3	9.2	2.9	0.1**	12.2	0.2	2.2	3.0	2.2
78	6.8	3.3	40.8	9.4	1.4	15.2	8.6	1.6	12.9	5.6	1.1	5.6
79	8.4	2.4	50.4	10.7	1.3	19.5	14.8	0.9	22.2	5.6	1.1	5.6
80	9.2	1.9	55.2	12.6	1.1	21.2	17.2	0.8	25.8	11.2	0.5	11.2
81	8.4	2.4	50.4	10.7	1.3	19.5	14.8	0.9	22.2	5.6	1.1	5.6
82	6.8	3.3	40.8	9.2	1.5	15.4	8.6	1.6	12.9	5.6	1.1	5.6
83	6.8	3.3	40.8	9.9	1.4	16.6	9.4	1.5	14.1	5.6	1.1	5.6
84	12.6	0.9	75.6	25.1	0.7	49.0	28.3	0.5	41.5	14.0	0.4	14.0
85	10.6	1.1	63.6	12.1	0.5	22.6	13.0	1.1	19.5	11.5	0.5	11.5
86	10.5	1.2	63.0	6.5	1.2	12.4	6.9	1.8	10.4	5.4	1.1	5.4
87	7.6	2.8	45.6	10.2	1.3	17.0	9.4	1.5	14.1	5.6	1.1	5.6
88	10.5	1.2	63.0	39.0	0.2	44.0	32.1	0.4	48.2	27.4	0.2	27.4
89	7.6	2.8	45.6	10.2	1.3	17.0	9.4	1.5	14.1	5.6	1.1	5.6
90	9.9	1.5	59.4	5.0	1.4	9.5	5.2	2.4	7.8	4.1	1.5	4.1

(Continued)

* The vehicle was immobilized on each rice dike. A 20-minute penalty was assessed for each immobilization and included in the speed calculation.

** The size and density of trees required that some trees be cut in order for the vehicle to negotiate the terrain. The speed was computed using a [illegible]-minute penalty for each tree that needed to be cut.

Table 3 (Continued)

Terrain Types	Wheeled Vehicles																		Tracked Vehicles											
	M656			M54A2			M520			M37B1			M561			M706			M548			M113A1			M116			M571		
	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph
91	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0	9.0	0.8	6.8	14.7	0.5	18.4	10.5	1.2	20.5	9.2	1.9	55.2	12.6	1.1	21.2	17.2	0.8	25.8	11.2	0.5	11.2
92	18.8	0.6	94.0	14.8	1.0	74.0	11.8	1.0	94.4	11.6	0.6	8.7	36.5	0.2	45.6	12.2	1.0	12.2	14.6	0.8	87.6	14.2	0.9	22.4	30.6	0.5	45.9	22.4	0.3	22.4
93	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8	0.2	6.0	0.2	2.5	3.0	3.3	2.1	5.8	2.1	0.1**	5.9	0.6	1.3	9.2	2.9	0.1*	12.2	0.2	2.2	3.0	2.2
94	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0	9.0	0.8	6.8	14.7	0.5	18.4	10.5	1.2	10.5	9.2	1.9	55.2	12.6	1.1	21.2	17.2	0.8	25.8	11.2	0.5	11.2
95	9.4	1.3	47.0	8.0	1.5	40.0	5.8	2.0	46.4	8.9	0.8	6.7	8.8	0.8	11.0	11.0	1.1	11.1	8.4	2.4	50.4	10.6	1.3	18.[illegible]	10.6	1.3	15.9	5.6	1.1	5.6
96	16.2	0.8	81.0	11.0	1.1	55.0	8.2	1.6	65.6	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4	10.5	1.2	63.0	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
97	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6	16.0	0.4	12.0	24.6	0.3	30.8	27.4	0.4	27.4	10.5	1.2	63.0	24.8	0.8	41.7	20.8	0.7	31.2	14.8	0.4	14.8
98	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0	10.8	0.7	8.1	13.2	0.5	16.5	13.2	0.9	.2	9.4	1.8	56.4	12.1	1.1	23.9	11.4	1.2	17.1	12.0	0.5	17.0
Wet Season (60 or 40 RCI)																														
1	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0										9.2	1.9	55.2									
2	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0										9.4	1.8	56.4									
3	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6										10.0	1.5	60.0									
4	14.1	0.9	70.5	7.8	1.5	39.0	6.5	1.8	52.0										10.0	1.5	60.0									
5	25.2	0.4	126.0	16.3	1.0	81.5	7.6	1.5	60.8										10.4	1.3	62.4									
6	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4										8.4	2.4	50.4									
6A	8.3	1.5	41.5	6.6	1.6	33.0	6.1	2.0	48.8										8.0	2.6	48.0									
7	0.1*	3.3	0.5	0.1*	2.8	0.5	2.5	3.6	20.0										5.3	4.1	31.8									
7A	9.1	1.4	45.5	7.2	1.4	36.0	8.1	1.5	64.8										6.5	1.8	39.0									
8	27.2	0.2	136.0	23.5	0.6	117.5	15.0	0.7	120.0										26.2	0.4	157.2									
9	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8										0.1**	5.9	0.6									
10	16.2	0.8	81.0	10.0	1.3	50.0	7.2	1.6	57.6										10.0	1.5	60.0									
11	9.4	1.3	47.0	8.0	1.5	40.0	5.8	2.0	46.4										8.4	2.4	50.4									
12	0.1*	2.2	0.5	0.1*	2.3	0.5	6.1	1.9	48.8										8.5	2.3	51.0									
13	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8										0.1**	5.9	0.6									
14	9.0	1.4	45.0	7.5	1.5	38.0	5.7	2.1	45.6										6.8	3.3	40.8									
14A	7.0	1.8	35.0	5.6	2.1	28.0	5.2	2.2	41.6										6.0	3.8	36.0									
15	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0										9.2	1.9	55.2									
16	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0										9.2	1.9	55.2									
17	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6										10.5	1.2	63.0									
18	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0										9.4	1.8	56.4									
19	27.2	0.2	136.0	23.5	0.6	117.5	15.0	0.7	120.0										18.2	0.7	109.2									
20	20.0	0.6	100.0	13.2	0.9	66.0	12.0	0.9	96.0										18.5	0.7	111.0									
21	16.2	0.8	81.0	10.0	1.3	50.0	7.2	1.6	57.6										10.0	1.5	60.0									
22	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0										9.2	1.9	55.2									
23	25.2	0.4	126.0	16.4	1.0	82.0	7.8	1.5	62.4										10.6	1.1	63.6									
24	9.0	1.4	45.0	7.6	1.5	38.0	5.7	2.1	45.6										6.8	3.3	40.8									
25	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4										8.4	2.4	50.4									
26	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6										10.0	1.5	60.0									
27	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0										9.2	1.9	55.2									
28	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6										10.0	1.5	60.0									
29	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0										9.2	1.9	55.2									
30	0.1*	3.3	0.5	0.1*	2.8	0.5	6.1	1.9	48.8										8.5	2.3	51.0									
31	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6										10.0	1.5	60.0									
32	0.1*	3.3	0.5	0.1*	2.8	0.5	7.0	1.6	56.0										9.9	1.5	59.4									

(Continued)

* The vehicle was immobilized on each rice dike. A 20-minute penalty was assessed for each immobilization and included in the speed calculation.
** The size and density of trees required that some trees be cut in order for the vehicle to negotiate the terrain. The speed was computed using a 5-minute penalty for each tree that needed to be cut.

Table 3 (Continued)

	Wheeled Vehicles																		Tracked Vehicles											
	M656			M54A2			M520			M37B1			M561			M706			M548			M113A1			M116			M571		
Terrain Types	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph
33	16.2	0.8	81.0	11.0	1.1	55.0	7.6	1.5	60.8										10.4	1.3	62.4									
34	0.1*	3.3	0.5	0.1*	2.8	0.5	7.0	1.7	56.0										9.4	1.8	56.4									
35	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6										10.0	1.5	60.0									
36	16.2	0.8	81.0	11.0	1.1	55.0	8.2	1.6	65.6										10.5	1.2	63.0									
36A	12.0	1.2	60.0	7.4	1.6	37.0	6.9	1.8	55.2										9.2	1.9	55.2									
37	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6										10.5	1.2	63.0									
38	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6										10.5	1.2	63.0									
39	19.2	0.8	96.0	16.0	1.1	80.0	9.5	1.5	76.0										12.1	0.9	72.6									
40	10.6	1.2	53.0	8.2	1.5	41.0	5.9	2.0	47.2										7.8	2.7	46.8									
41	0.1**	3.3	0.5	0.1**	2.8	0.5	3.8	2.8	30.4										0.1**	5.9	0.6									
42	15.3	1.2	76.5	11.4	1.6	57.0	7.2	2.1	57.6										7.2	3.0	43.2									
43	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.8	28.8										0.1**	5.9	0.6									
44	13.8	1.9	69.0	11.6	1.7	58.0	8.2	2.1	65.6										10.2	1.4	61.2									
45	0.1**	3.3	0.5	0.1**	2.8	0.5	6.5	2.2	52.0										0.1**	5.9	0.6									
46	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8										0.1**	5.9	0.6									
47	0.1*	3.3	0.5	0.1*	2.8	0.5	7.0	1.6	56.0										9.9	1.5	59.4									
48	9.0	1.4	45.0	7.6	1.5	38.0	5.7	2.1	45.6										6.8	3.3	40.8									
49	13.2	1.1	66.0	11.6	1.2	58.0	7.4	1.7	59.2										8.6	2.3	51.6									
50	13.2	1.1	66.0	11.6	1.2	58.0	7.4	1.7	59.2										8.6	2.3	51.6									
51	17.3	1.1	86.5	14.6	1.5	73.0	9.2	1.7	73.6										9.8	1.6	58.8									
52	18.3	0.7	91.5	10.0	1.8	50.0	7.2	1.6	57.6										10.0	1.5	60.0									
53	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0										9.4	1.8	56.4									
54	16.2	0.8	81.0	11.0	1.1	55.0	7.6	1.5	60.8										10.4	1.3	62.4									
55	16.2	0.8	81.0	10.0	1.3	50.0	7.2	1.6	57.6										10.0	1.5	60.0									
56	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4										8.4	2.4	50.4									
56A	8.3	1.5	41.5	6.6	1.6	33.0	6.1	2.0	48.8										8.0	2.6	48.0									
57	13.3	1.0	66.5	9.0	1.3	45.0	6.8	1.8	54.4										7.8	2.7	46.8									
58	25.2	0.4	126.0	16.4	1.0	82.0	7.8	1.5	62.4										10.6	1.1	63.6									
59	0.1*	3.3	0.5	0.1*	2.8	0.5	2.5	3.6	20.0										5.3	4.1	31.8									
60	17.6	1.0	88.0	14.8	1.3	74.0	10.2	1.6	81.6										12.4	0.9	74.4									
61	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6										10.5	1.2	63.0									
62	13.2	1.1	66.0	11.6	1.2	58.0	7.4	1.7	59.2										8.6	2.3	51.6									
63	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4										8.4	2.4	50.4									
64	25.2	0.4	126.0	16.4	1.0	82.0	7.8	1.5	62.4										10.6	1.1	63.6									
65	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0										9.4	1.8	56.4									
66	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0										9.2	1.9	55.2									
67	9.3	1.4	46.5	7.8	1.6	39.0	5.8	2.0	46.4										6.8	3.3	40.8									
68	0.1**	3.3	0.5	0.1**	2.8	0.5	3.8	2.8	30.4										0.1**	5.9	0.6									
69	16.2	0.8	81.0	10.0	1.3	50.0	7.2	1.6	57.6										10.0	1.5	60.0									
70	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0										9.4	1.8	56.4									
71	14.4	1.0	72.0	11.0	1.1	55.0	7.7	1.6	61.6										9.2	1.9	55.2									
71A	9.2	1.3	46.0	7.4	1.6	37.0	6.7	1.8	53.6										8.6	2.3	51.6									
72	0.1	3.3	0.5	0.1**	2.8	0.5	3.8	2.8	30.4										0.1**	5.9	0.6									
73	17.4*	0.8	87.0	10.0	1.3	50.0	7.2	1.6	57.6										10.0	1.4	45.6									
73A	9.1	1.4	45.5	7.2	1.4	36.0	6.5	1.8	52.0										9.0	2.1	54.0									

(Continued)

* The vehicle was immobilized on each rice dike. A 20-minute penalty was assessed for each immobilization and included in the speed calculation.
** The size and density of trees required that some trees be cut in order for the vehicle to negotiate the terrain. The speed was computed using a 5-minute penalty for each tree that needed to be cut.

Table 3 (Continued)

	Wheeled Vehicles																	
	M656			M54A2			M520			M37B1			M561			M706		
Terrain Types	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph
74	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8									
75	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8									
76	0.1**	3.3	0.5	0.1**	2.8	0.5	3.8	2.8	30.4									
77	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.8	28.8									
78	9.0	1.4	45.0	7.6	1.5	38.0	5.7	2.1	45.6									
79	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4									
80	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0									
81	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4									
82	9.3	1.4	46.5	7.8	1.6	39.0	5.7	2.0	45.6									
83	9.1	1.4	45.5	7.6	1.7	38.0	5.7	2.1	45.6									
84	19.3	0.7	96.5	16.0	1.1	80.0	10.4	1.4	83.2									
85	17.4	0.8	87.0	12.7	0.9	63.5	7.8	1.5	62.4									
86	0.1*	3.3	0.5	0.1*	2.8	0.5	8.0	1.4	64.0									
86A	0.1	3.3	0.5	0.1	2.8	0.5	6.1	2.0	48.8									
87	8.7	1.5	43.5	7.4	1.5	37.0	5.6	2.1	44.8									
88	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6									
88A	12.0	1.2	70.0	7.4	1.6	37.0	6.9	1.8	55.2									
89	8.7	1.5	43.5	7.4	1.5	37.0	5.6	2.1	44.8									
90	0.1*	3.3	0.5	0.1*	2.8	0.5	7.0	1.7	56.0									
91	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0									
92	18.8	0.6	94.0	14.8	1.0	74.0	11.8	1.0	94.4									
93	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8									
94	9.1	1.3	45.5	7.2	1.5	36.0	6.5	1.8	52.0									
95	9.4	1.3	47.0	8.0	1.5	40.0	5.8	2.0	46.4									
96	16.2	0.8	81.0	11.0	1.1	55.0	8.2	1.6	65.6									
96A	12.0	1.2	60.0	7.4	1.6	37.0	6.9	1.8	55.2									
97	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6									
97A	12.0	1.2	60.0	7.4	1.6	37.0	6.9	1.8	55.2									
98	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0									
Wet Season (60 or 35 RCI)																		
1	8.0	1.5	40.0	6.2	1.6	31.0	3.1	2.6	24.8	6.7	1.1	5.3	5.6	1.3	7.0	6.7	1.8	6.7
2	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0	10.8	0.7	8.1	13.2	0.5	16.5	13.2	0.9	13.2
3	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6	31.0	0.2	23.3	40.9	0.2	50.0	38.3	0.3	38.3
4	14.1	0.9	70.5	7.8	1.5	39.0	6.5	1.8	52.0	7.0	1.1	5.3	5.6	1.3	7.0	6.4	1.9	6.4
5	25.2	0.4	126.0	16.3	1.0	81.5	7.6	1.5	60.8	20.7	0.3	15.5	36.2	0.2	45.3	33.0	0.4	33.0
6	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4	9.4	0.8	7.1	14.4	0.5	18.0	15.8	0.8	15.8
6A	7.6	1.6	38.0	6.2	2.0	31.0	3.5	2.8	28.0	7.4	1.0	5.6	8.6	0.8	10.8	7.5	1.6	7.5
7	0.1*	3.3	0.5	0.1*	2.8	0.5	2.5	3.6	20.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
7A	8.0	1.5	40.0	6.2	1.6	31.0	3.1	2.6	24.8	0.1*	6.0	0.1	0.1	7.7	0.1	0.1	12.3	0.1
8	27.2	0.2	136.0	23.5	0.6	117.5	15.0	0.7	120.0	33.7	0.2	25.3	40.0	0.2	50.0	40.0	0.3	43.7
9	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
10	16.2	0.8	81.0	10.0	1.3	50.0	7.2	1.6	57.6	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
11	9.4	1.3	47.0	8.0	1.5	40.0	5.8	2.0	46.4	8.9	0.8	6.7	8.6	0.8	11.0	11.0	1.1	11.0
12	0.1*	3.3	0.5	0.1*	2.8	0.5	2.9	3.3	23.2	0.1*	6.0	0.1	0.1	7.7	0.1	0.1	12.3	0.1
13	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1

				Tracked Vehicles								
	M548			M113A1			M116			M571		
Terrain Types	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal-mile	Delivery ton-mph
74	0.1**	5.9	0.6									
75	0.1**	5.9	0.6									
76	0.1**	5.9	0.6									
77	0.1**	5.9	0.6									
78	6.8	3.3	40.8									
79	8.4	2.4	50.4									
80	9.2	1.9	55.2									
81	8.4	2.4	50.4									
82	6.8	3.3	40.8									
83	6.8	3.3	40.8									
84	12.6	0.9	75.6									
85	10.6	1.1	63.6									
86	10.5	1.2	63.0									
86A	8.0	2.6	48.0									
87	7.6	2.8	45.6									
88	10.5	1.2	63.0									
88A	9.2	1.9	55.2									
89	7.6	2.8	45.6									
90	9.9	1.5	59.4									
91	9.2	1.9	55.2									
92	14.6	0.8	87.6									
93	0.1**	5.9	0.6									
94	9.2	1.9	55.2									
95	8.4	2.4	50.4									
96	10.5	1.2	63.0									
96A	9.2	1.9	55.2									
97	10.5	1.2	63.0									
97A	9.2	1.9	55.2									
98	9.4	1.8	56.4									
Wet Season (60 or 35 RCI)												
1	7.8	1.7	46.8	6.7	1.2	12.7	7.0	1.7	10.5	6.2	1.0	6.2
2	9.4	1.8	56.4	12.1	1.1	23.9	11.4	1.2	17.1	12.0	0.5	12.0
3	10.0	1.5	60.0	39.0	0.2	44.0	32.1	0.4	48.2	27.4	0.2	27.4
4	10.0	1.5	60.0	6.8	1.2	12.9	7.0	1.7	10.5	6.2	1.0	6.2
5	10.4	1.3	62.4	12.2	1.1	22.4	29.0	0.5	43.5	15.6	0.4	15.6
6	8.4	2.4	50.4	10.7	1.3	19.5	14.8	0.9	22.2	5.6	1.1	5.6
6A	6.5	2.0	39.0	12.2	1.3	18.5	11.0	1.3	16.5	5.6	1.1	5.6
7	5.3	4.1	31.8	2.1	3.8	4.1	2.2	5.6	3.3	1.6	4.1	1.6
7A	7.8	1.7	46.8	2.0	2.8	4.0	2.2	5.6	3.3	1.6	4.1	1.6
8	26.2	0.4	157.2	25.5	0.7	44.4	32.1	0.4	48.2	23.8	0.3	23.8
9	0.1**	5.9	0.6	1.3	9.2	2.0	0.1*	12.2	0.2	2.2	3.0	2.2
10	10.0	1.5	60.0	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
11	8.4	2.4	50.4	10.6	1.3	18.9	10.6	1.3	15.9	5.6	1.1	5.6
12	6.8	3.3	40.8	4.9	1.5	9.3	5.2	2.4	7.8	4.0	1.5	4.0
13	0.1**	5.9	0.6	1.3	9.2	2.9	0.1*	12.2	0.2	2.2	3.0	2.2

(Continued)

* The vehicle was immobilized on each rice dike. A 20-minute penalty was assessed for each immobilization and included in the speed calculation.
** The size and density of trees required that some trees be cut in order for the vehicle to negotiate the terrain. The speed was computed using a 5-minute penalty for each tree that needed to be cut.

Table 3 (Continued)

	Wheeled Vehicles																	
	M656			M54A2			M520			M37B1			M561			M705		
Terrain Types	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gla/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph
14	9.0	1.4	45.0	7.6	1.5	38.0	5.7	2.1	45.6	6.5	1.2	[illegible]	.4	1.0	9.3	8.8	1.4	8.8
14A	6.4	1.8	32.0	2.6	2.1	13.0	1.6	3.0	12.8	2.8	2.1	2		1.1	8.2	2.8	4.4	2.8
15	8.0	1.5	40.0	6.2	1.6	31.0	3.1	2.6	24.8	9.5	0.8	7.1	5.2	0.8	11.5	9.2	1.3	9.2
16	8.2	1.4	41.0	6.2	1.6	31.0	4.0	2.6	32.0	8.2	0.9	6.2	9.3	0.8	11.6	8.8	1.4	8.8
17	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6	31.0	0.2	23.3	40.0	0.2	50.0	31.0	0.4	31.0
18	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0	10.8	0.7	8.1	13.2	0.5	16.5	13.2	0.9	13.2
19	27.2	0.2	136.0	23.5	0.6	117.5	15.0	0.7	120.0	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
20	8.0	1.5	40.0	6.8	1.3	34.0	3.1	2.6	24.8	9.4	0.8	7.0	34.5	0.2	43.1	10.6	1.2	10.6
21	16.2	0.8	81.0	10.0	1.3	50.0	7.2	1.6	57.6	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
22	8.0	1.5	40.0	6.2	1.6	31.0	3.1	2.6	24.8	9.5	0.8	7.1	9.2	0.8	11.5	9.2	1.3	9.2
23	25.2	0.4	126.0	16.4	1.0	82.0	7.8	1.5	62.4	23.7	0.3	17.8	36.5	0.2	45.6	33.7	0.4	33.7
24	9.0	1.4	45.0	7.6	1.5	38.0	5.7	2.1	45.6	6.5	1.2	4.9	7.4	1.0	9.3	8.8	1.3	8.8
25	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4	9.4	0.8	7.1	14.4	0.5	18.0	15.8	0.8	15.8
26	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6	11.6	0.6	8.7	25.2	0.3	31.5	20.6	0.6	20.6
27	8.2	1.4	41.0	6.2	1.6	31.0	4.0	2.6	32.0	8.2	0.9	6.2	9.3	0.8	11.6	8.8	1.4	8.8
28	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6	31.0	0.2	23.3	40.0	0.2	50.0	30.4	0.4	30.4
29	8.2	1.4	41.0	6.2	1.6	31.0	4.0	2.6	32.0	8.2	0.9	6.2	9.3	0.8	11.6	8.8	1.4	8.8
30	0.1*	3.3	0.5	0.1*	2.8	0.5	2.9	3.3	23.2	0.1*	6.0	0.1	0.1	7.7	0.1	0.1	12.3	0.1
31	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6	31.0	0.2	23.3	40.0	0.2	50.0	38.3	0.3	38.3
32	0.1*	3.3	0.5	0.1*	2.8	0.5	7.0	1.6	56.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
33	16.2	0.8	81.0	11.0	1.1	55.0	7.6	1.5	60.8	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
34	0.1*	3.3	0.5	0.1*	2.8	0.5	7.0	1.7	56.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
35	18.3	0.7	91.5	10.0	1.3	50.0	7.2	1.6	57.6	11.6	0.6	8.7	25.2	0.3	31.5	20.6	0.6	20.6
36	16.2	0.8	81.0	11.0	1.1	55.0	8.2	1.6	65.6	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
36A	8.0	1.5	40.0	2.6	2.1	13.0	1.6	3.0	12.8	9.5	0.8	7.1	9.2	0.8	11.5	9.2	1.3	9.2
37	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6	31.0	0.2	23.3	40.0	0.2	50.0	38.3	0.3	38.3
38	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6	16.0	0.4	12.0	24.6	0.3	30.8	27.4	0.4	27.4
39	19.2	0.8	96.0	16.0	1.1	80.0	9.5	1.5	76.0	27.1	0.2	20.3	28.1	0.3	35.1	35.0	0.4	35.0
40	10.6	1.2	53.0	8.2	1.5	41.0	5.9	2.0	47.2	8.8	0.8	6.6	8.8	0.8	11.0	12.0	1.0	12.0
41	0.1**	3.3	0.5	0.1**	2.8	0.5	3.8	2.8	30.4	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
42	15.3	1.2	76.5	11.4	1.6	57.0	7.2	2.1	57.6	7.7	1.0	5.8	8.9	0.8	11.1	14.2	0.9	14.2
43	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.8	28.8	0.2	6.0	0.2	2.5	3.1	3.1	2.0	6.2	2.0
44	13.8	1.9	69.0	11.6	1.7	58.0	8.2	2.1	65.6	6.2	1.2	4.7	21.5	0.3	26.9	28.9	0.4	28.9
45	0.1**	3.3	0.5	0.1**	2.8	0.5	6.5	2.2	52.0	0.1**	6.0	0.1	2.0	3.8	2.5	1.0	12.3	1.0
46	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8	0.2	6.0	1.2	2.6	3.0	3.3	2.1	5.8	2.1
47	0.1*	3.3	0.5	0.1*	2.8	0.5	7.0	1.6	56.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
48	9.0	1.4	45.0	7.6	1.5	38.0	5.7	2.1	45.6	6.5	1.2	4.9	7.4	1.0	9.3	8.8	1.4	8.8
49	13.2	1.1	66.0	11.6	1.2	58.0	7.4	1.7	59.2	11.2	0.6	8.4	16.3	0.4	20.4	18.6	0.7	18.6
50	13.2	1.1	66.0	11.6	1.2	58.0	7.4	1.7	59.2	11.2	0.6	8.4	16.3	0.4	20.4	18.6	0.7	18.6
51	17.3	1.1	86.5	14.6	1.5	73.0	9.2	1.7	73.6	18.9	0.4	14.2	17.2	0.4	21.5	20.2	0.6	20.2
52	18.3	0.7	91.5	10.0	1.8	50.0	7.2	1.6	57.6	31.0	0.2	23.3	40.0	0.2	50.0	38.3	0.3	38.3
53	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0	10.8	0.7	8.1	13.2	0.5	16.5	13.2	0.9	13.2
54	16.2	0.8	81.0	11.0	1.1	55.0	7.6	1.5	60.8	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
55	16.2	0.8	81.0	10.0	1.3	50.0	7.2	1.6	57.6	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
56	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4	9.4	0.8	7.1	14.4	0.5	18.0	15.8	0.8	15.8

	Tracked Vehicles											
	M548			M113A1			M116			M571		
Terrain Types	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph	Speed mph	Fuel Consumption gal/mile	Delivery ton-mph
14	6.8	3.3	40.8	9.4	1.4	15.2	8.6	1.6	12.9	5.6	1.1	5.6
14A	4.8	2.2	28.8	8.9	1.5	13.5	8.1	1.5	12.2	5.6	1.09	5.6
15	7.8	1.7	46.8	10.3	0.8	18.5	10.9	1.3	16.4	9.7	0.6	9.7
16	7.8	1.7	46.8	12.2	1.1	20.4	15.8	0.9	23.7	10.8	0.6	10.8
17	10.5	1.2	63.0	39.0	0.2	44.0	32.1	0.4	48.2	27.4	0.2	27.4
18	9.4	1.8	56.4	12.1	1.1	23.9	11.4	1.2	17.1	12.0	0.5	12.0
19	18.2	0.7	109.2	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
20	10.2	1.4	61.2	14.2	1.0	21.8	29.5	0.5	44.2	19.6	0.3	19.6
21	10.0	1.5	60.0	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
22	7.8	1.7	46.8	10.3	0.8	18.5	10.9	1.3	16.4	9.7	0.6	9.7
23	10.6	1.1	63.6	12.2	1.1	26.2	29.5	0.5	44.3	15.5	0.4	15.5
24	6.8	3.3	40.8	9.4	1.4	15.2	9.6	1.6	12.9	5.6	1.1	5.6
25	8.4	2.4	50.4	10.7	1.3	19.5	14.8	0.9	22.2	5.6	1.1	5.6
26	10.0	1.5	60.0	11.6	1.2	21.6	22.8	0.6	34.2	11.5	0.5	11.5
27	7.8	1.7	46.8	12.2	1.1	20.4	15.8	0.9	23.7	10.8	0.6	10.8
28	10.0	1.5	60.0	39.0	0.2	44.0	32.1	0.4	48.2	27.4	0.2	27.4
29	7.8	1.7	46.8	12.2	1.1	20.4	15.8	0.9	23.7	10.8	0.6	10.8
30	6.8	3.3	40.8	4.9	1.5	9.3	5.2	2.4	7.8	4.0	1.5	4.0
31	10.0	1.5	60.0	39.0	0.2	44.0	32.1	0.4	48.2	27.4	0.2	27.4
32	9.9	1.5	59.4	5.0	1.4	9.5	5.2	2.4	7.8	4.1	1.5	4.1
33	10.4	1.3	62.4	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
34	9.4	1.8	56.4	5.0	1.4	9.5	5.2	2.4	7.8	4.1	1.5	4.1
35	10.0	1.5	60.0	11.6	1.2	21.6	22.8	0.6	34.2	11.5	0.5	11.5
36	10.5	1.2	63.0	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
36A	9.3	1.7	55.8	10.3	0.8	18.5	10.9	1.3	16.4	9.7	0.6	9.7
37	10.5	1.2	63.0	39.0	0.2	44.0	32.1	0.4	48.2	27.4	0.2	27.4
38	10.5	1.2	63.0	24.8	0.8	41.7	20.8	0.7	31.2	14.8	0.4	14.8
39	12.1	0.9	72.6	25.0	0.8	49.0	26.8	0.5	40.2	15.3	0.4	15.3
40	7.8	2.7	46.8	10.6	1.3	18.5	10.2	1.4	15.3	5.6	1.1	5.6
41	0.1**	5.9	0.6	1.3	9.2	2.9	0.1*	12.2	0.2	2.2	3.0	2.2
42	7.2	3.0	43.2	8.8	1.6	16.6	10.0	1.4	15.0	5.6	1.1	5.6
43	0.1**	5.9	0.6	1.3	9.2	2.9	0.1*	12.2	0.2	2.2	3.0	2.2
44	10.2	1.4	61.2	20.3	3.7	5.8	7.7	1.6	11.6	4.8	1.3	4.8
45	0.1**	5.9	0.6	1.3	9.2	2.3	0.1*	12.2	0.2	2.2	3.0	2.2
46	0.1**	5.9	0.6	1.3	9.2	2.9	0.1*	12.2	0.2	2.2	3.0	2.2
47	9.9	1.5	59.4	5.0	1.4	9.5	5.2	2.4	7.8	4.1	1.5	4.1
48	6.8	3.3	40.8	9.4	1.4	15.2	8.6	1.6	12.9	5.6	1.1	5.6
49	8.6	2.3	51.6	17.3	0.9	29.0	15.0	0.9	22.5	5.6	1.1	5.6
50	8.6	2.3	51.6	17.3	0.9	29.0	15.0	0.9	22.5	5.6	1.1	5.6
51	9.8	1.6	58.8	23.6	0.9	28.6	15.5	0.9	23.3	5.6	1.1	5.6
52	10.0	1.5	60.0	39.0	0.2	44.0	32.1	0.4	48.2	27.0	0.2	27.2
53	9.4	1.8	56.4	12.1	1.1	23.9	11.4	1.2	17.1	12.0	0.5	12.0
54	10.4	1.3	62.4	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
55	10.0	1.5	60.0	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
56	8.4	2.4	50.4	10.7	1.3	19.5	14.8	0.9	22.2	5.6	1.1	5.6

(Continued)

* The vehicle was immobilized on each rice dike. A 20-minute penalty was assessed for each immobilization and included in the speed calculation.

** The size and density of trees required that some trees be cut in order for the vehicle to negotiate the terrain. The speed was computed using a 5-minute penalty for each tree that needed to be cut.

Table 3 (Continued)

Wheeled Vehicles

Terrain Types	M656 Speed mph	M656 Fuel Consumption gal/mile	M656 Delivery ton-mph	M54A2 Speed mph	M54A2 Fuel Consumption gal/mile	M54A2 Delivery ton-mph	M520 Speed mph	M520 Fuel Consumption gal/mile	M520 Delivery ton-mph	M37B1 Speed mph	M37B1 Fuel Consumption gal/mile	M37B1 Delivery ton-mph	M561 Speed mph	M561 Fuel Consumption gal/mile	M561 Delivery ton-mph	M706 Speed mph	M706 Fuel Consumption gal/mile	M706 Delivery ton-mph
56A	7.6	1.6	38.0	6.2	2.0	31.0	3.1	2.6	24.8	7.4	1.0	5.6	8.6	0.8	8.2	7.5	1.6	7.5
57	13.3	1.0	66.5	9.0	1.3	45.0	6.8	1.8	54.4	5.2	1.4	3.9	20.0	0.4	25.0	21.3	0.6	21.3
58	25.2	0.4	126.0	16.4	1.0	82.0	7.8	1.5	62.4	23.7	0.3	17.8	36.5	0.2	45.6	33.7	0.4	33.7
59	0.1*	3.3	0.5	0.1*	2.8	0.5	2.5	3.6	20.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
60	17.6	1.0	88.0	14.8	1.3	74.0	10.2	1.6	81.6	30.8	0.2	23.1	24.1	0.3	30.1	33.1	0.4	33.1
61	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6	16.0	0.4	12.0	24.6	0.3	30.8	27.4	0.4	27.4
62	13.2	1.1	66.0	11.6	1.2	58.0	7.4	1.7	59.2	11.2	0.6	8.4	16.3	0.4	20.4	18.6	0.7	18.6
63	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4	9.4	0.8	7.1	14.4	0.5	18.0	15.8	0.8	15.8
64	25.2	0.4	126.0	16.4	1.0	82.0	7.8	1.5	62.4	23.7	0.3	17.8	36.5	0.2	45.6	33.7	0.4	33.7
65	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0	10.8	0.7	8.1	13.2	0.5	16.5	13.2	0.9	13.2
66	8.2	1.4	41.0	6.2	1.6	31.0	4.0	2.6	32.0	8.2	0.9	6.2	9.3	0.8	11.6	8.8	1.4	8.8
67	9.3	1.4	46.5	7.8	1.6	39.0	5.8	2.0	46.4	6.4	1.2	4.8	7.4	1.0	9.3	9.3	1.3	9.3
68	0.1**	3.3	0.5	0.1**	2.8	0.5	3.8	2.8	30.4	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
69	16.2	0.8	81.0	10.0	1.3	50.0	7.2	1.6	57.6	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4
70	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0	10.8	0.7	8.1	13.2	0.5	16.5	13.2	0.9	13.2
71	14.4	1.0	72.0	11.0	1.1	55.0	7.7	1.6	61.6	10.8	0.7	8.1	12.9	0.6	16.1	12.8	1.0	12.8
71A	8.0	1.5	40.0	6.2	1.8	31.0	3.1	2.6	24.8	9.7	0.8	7.3	11.0	0.7	13.8	9.4	1.3	9.4
72	0.1**	3.3	0.5	0.1**	2.8	0.5	3.8	2.8	30.4	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
73	17.4	0.8	87.0	10.0	1.3	50.0	7.2	1.6	57.6	12.4	0.5	9.3	11.6	0.6	14.5	12.2	1.0	12.2
73A	8.0	1.5	40.0	6.2	1.6	31.0	3.1	2.6	24.8	10.5	0.7	7.9	10.9	0.7	13.6	10.3	1.2	10.3
74	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
75	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
76	0.1**	3.3	0.5	0.1**	2.8	0.5	3.8	2.8	30.4	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
77	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.8	28.8	0.2	6.0	0.2	2.5	3.1	3.1	2.0	6.2	2.0
78	9.0	1.4	45.0	7.6	1.5	38.0	5.7	2.1	45.6	6.5	1.2	4.9	7.4	1.0	9.3	8.8	1.4	8.8
79	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4	9.4	0.8	7.1	14.4	0.5	18.0	15.8	0.8	15.8
80	9.0	1.5	40.0	6.2	1.6	31.0	3.1	2.6	24.8	8.2	0.9	6.2	9.3	0.8	11.6	8.8	1.4	8.8
81	13.2	1.0	66.0	8.8	1.4	44.0	6.8	1.8	54.4	9.4	0.8	7.1	14.4	0.5	18.0	15.8	0.8	15.8
82	9.3	1.4	46.5	7.8	1.6	39.0	5.7	2.0	45.6	6.4	1.2	4.8	7.4	1.0	9.3	9.3	1.3	9.3
83	9.1	1.4	45.5	7.6	1.7	38.0	5.7	2.1	45.6	7.8	1.0	5.9	8.1	0.9	10.2	9.5	1.3	9.5
84	19.3	0.7	96.5	16.0	1.1	80.0	10.4	1.4	83.2	28.7	0.2	21.5	30.2	0.2	37.8	34.5	0.4	34.5
85	17.4	0.8	87.0	12.7	0.9	63.5	7.8	1.5	62.4	12.4	0.5	9.3	11.6	0.6	14.5	12.2	1.0	12.2
86	0.1*	3.3	0.5	0.1*	2.8	0.5	8.0	1.4	54.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
86A	0.1*	3.3	0.5	0.1*	2.8	0.5	2.9	3.3	23.2	0.1*	6.0	0.1	0.1	7.7	0.1	0.1	12.3	0.1
87	8.7	1.5	43.5	7.4	1.5	37.0	5.6	2.1	44.8	7.8	1.0	5.9	8.1	0.9	10.1	9.4	1.3	9.4
88	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6	31.0	0.2	23.3	40.0	0.2	50.0	30.4	0.4	30.4
88A	8.5	1.4	42.5	5.9	1.8	29.5	3.1	2.6	24.8	13.9	0.5	10.4	32.6	0.2	40.8	15.5	0.8	15.5
89	8.7	1.5	43.5	7.4	1.5	37.0	5.6	2.1	44.8	7.8	1.0	5.9	8.1	0.9	10.1	9.4	1.3	9.4
90	0.1*	3.3	0.5	0.1*	2.8	0.5	7.0	1.7	56.0	0.1*	6.0	0.1	0.1*	7.7	0.1	0.1*	12.3	0.1
91	8.2	1.4	41.0	6.2	1.6	31.0	4.0	2.6	32.0	8.2	0.9	6.2	9.3	0.8	11.6	8.8	1.4	8.8
92	8.0	1.5	40.0	6.8	1.3	34.0	3.1	2.6	24.8	9.4	0.8	7.0	34.5	0.2	43.1	10.6	1.2	10.6
93	0.1**	3.3	0.5	0.1**	2.8	0.5	3.6	2.9	28.8	0.2	6.0	0.2	2.6	3.0	3.3	2.1	5.8	2.1
94	8.0	1.5	40.0	6.2	1.6	31.0	3.1	2.6	24.8	8.2	0.9	6.2	9.3	0.8	11.6	10.5	1.2	10.5
95	9.4	1.3	47.0	8.0	1.5	40.0	5.8	2.0	46.4	8.9	0.8	6.7	8.8	0.8	11.0	11.0	1.1	11.1
96	16.2	0.8	81.0	11.0	1.1	55.0	8.2	1.6	65.6	10.8	0.7	8.1	9.6	0.8	12.0	10.4	1.2	10.4

Tracked Vehicles

Terrain Types	M548 Speed mph	M548 Fuel Consumption gal/mile	M548 Delivery ton-mph	M113A1 Speed mph	M113A1 Fuel Consumption gal/mile	M113A1 Delivery ton-mph	M116 Speed mph	M116 Fuel Consumption gal/mile	M116 Delivery ton-mph	M571 Speed mph	M571 Fuel Consumption gal/mile	M571 Delivery ton-mph
56A	6.5	2.5	39.0	10.2	1.3	18.5	11.0	1.3	16.5	5.6	1.1	5.6
57	7.8	2.7	46.8	10.8	1.3	19.7	5.4	2.3	8.1	6.6	0.9	6.6
58	10.6	1.1	63.6	12.2	1.1	26.2	29.5	0.5	44.3	15.5	0.4	15.5
59	5.3	4.1	31.8	2.1	3.8	4.1	2.2	5.6	3.3	1.6	4.1	1.6
60	12.4	0.9	74.4	24.0	0.9	46.1	23.2	0.6	34.8	20.2	0.3	20.2
61	10.5	1.2	63.0	24.8	0.8	41.7	20.8	0.7	31.2	14.8	0.4	14.8
62	8.6	2.3	51.6	17.3	0.9	29.0	15.0	0.9	22.5	5.6	1.1	5.6
63	8.4	2.4	50.4	10.7	1.3	19.5	14.8	0.9	22.2	5.6	1.1	5.6
64	10.6	1.1	63.6	12.2	1.1	26.2	29.5	0.5	44.3	15.5	0.4	15.5
65	9.4	1.8	56.4	12.1	1.1	23.9	11.4	1.2	17.1	12.0	0.5	12.0
66	7.8	1.7	46.8	12.2	1.1	20.4	15.8	0.9	23.7	10.8	0.6	10.8
67	6.8	3.3	40.8	9.2	1.5	15.4	8.6	1.6	12.9	5.6	1.1	5.6
68	0.1**	5.9	0.6	1.3	9.2	2.9	0.1*	12.2	0.2	2.2	3.0	2.2
69	10.0	1.5	60.0	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9
70	9.4	1.8	56.4	12.1	1.1	23.9	11.4	1.2	17.1	12.0	0.5	12.0
71	9.2	1.9	55.2	15.4	0.9	28.2	11.4	1.2	17.1	11.8	0.5	11.8
71A	8.0	1.6	48.0	14.5	1.1	23.5	11.4	1.3	17.1	11.5	0.53	11.5
72	0.1**	5.9	0.6	1.3	9.2	2.9	0.1*	12.2	0.2	2.2	3.0	2.2
73	10.0	1.5	60.0	12.1	0.5	22.6	13.0	1.1	19.5	11.5	0.5	11.5
73A	7.8	1.7	46.8	11.8	0.6	21.0	12.7	1.1	19.0	11.2	0.5	11.2
74	0.1**	5.9	0.6	1.3	9.2	2.9	0.1*	12.2	0.2	2.2	3.0	2.2
75	0.1**	5.9	0.6	1.3	9.2	2.9	0.1*	12.2	0.2	2.2	3.0	2.2
76	0.1**	5.9	0.6	1.3	9.2	2.9	0.1*	12.2	0.2	2.2	3.0	2.2
77	0.1**	5.9	0.6	1.3	9.2	2.9	0.1*	12.2	0.2	2.2	3.0	2.2
78	6.8	3.3	40.8	9.4	1.4	15.2	8.6	1.6	12.9	5.6	1.1	5.6
79	8.4	2.4	50.4	10.7	1.3	19.5	14.8	0.9	22.2	5.6	1.1	5.6
80	7.8	1.7	46.8	12.2	1.1	20.5	15.8	0.9	23.7	10.8	0.6	10.8
81	8.4	2.4	50.4	10.7	1.3	19.5	14.8	0.9	22.2	5.6	1.1	5.6
82	6.8	3.3	40.8	9.2	1.5	15.4	8.6	1.6	12.9	5.6	1.1	5.6
83	6.8	3.3	40.8	9.9	1.4	16.6	9.4	1.5	14.1	5.6	1.1	5.6
84	12.6	0.9	75.6	25.1	0.7	49.0	28.3	0.5	42.5	14.0	0.4	14.0
85	10.6	1.1	63.6	12.1	0.5	22.6	13.0	1.1	19.5	11.5	0.5	11.5
86	10.5	1.2	63.0	6.5	1.2	12.4	6.9	1.8	10.4	5.4	1.1	5.4
86A	6.8	3.3	40.8	4.9	1.5	9.3	5.2	2.4	7.8	4.0	1.4	4.0
87	7.6	2.8	45.6	10.2	1.3	17.0	9.4	1.5	14.1	5.6	1.1	5.6
88	10.5	1.2	63.0	39.0	0.2	44.0	32.1	0.4	48.2	27.4	0.2	27.4
88A	7.5	1.7	45.0	32.5	0.3	41.9	29.3	0.5	44.0	22.6	0.3	22.6
89	7.6	2.8	45.6	10.2	1.3	17.0	9.4	1.5	14.1	5.6	1.1	5.6
90	9.9	1.5	59.4	5.0	1.4	9.5	5.2	2.4	7.8	4.1	1.5	4.1
91	7.8	1.7	46.8	12.2	1.1	20.4	15.8	0.9	23.7	10.8	0.6	10.8
92	10.2	1.4	61.2	14.2	1.0	21.8	29.5	0.5	44.2	19.6	0.3	19.6
93	0.1**	5.9	0.6	1.3	9.2	2.9	0.1*	12.2	0.2	2.2	3.0	2.2
94	7.8	1.7	46.8	12.2	1.1	20.5	15.8	0.9	23.7	10.8	0.6	10.8
95	8.4	2.4	50.4	10.6	1.3	18.9	10.6	1.3	15.9	5.6	1.1	5.6
96	10.5	1.2	63.0	10.7	0.8	19.7	11.1	1.3	16.7	9.9	0.6	9.9

(Continued)

* The vehicle was immobilized on each rice dike. A 20-minute penalty was assessed for each immobilization and included in the speed calculation.
** The size and density of trees required that some trees be cut in order for the vehicle to negotiate the terrain. The speed was computed using a 5-minute penalty for each tree that needed to be cut.

Table 3 (Concluded)

Wheeled Vehicles

Terrain Types	M656 Speed mph	M656 Fuel Consumption gal/mile	M656 Delivery ton-mph	M54A2 Speed mph	M54A2 Fuel Consumption gal/mile	M54A2 Delivery ton-mph	M520 Speed mph	M520 Fuel Consumption gal/mile	M520 Delivery ton-mph	M37B1 Speed mph	M37B1 Fuel Consumption gal/mile	M37B1 Delivery ton-mph	M561 Speed mph	M561 Fuel Consumption gal/mile	M561 Delivery ton-mph	M706 Speed mph	M706 Fuel Consumption gal/mile	M706 Delivery ton-mph
96A	8.0	1.5	40.0	2.6	2.1	13.0	1.6	3.0	12.8	9.5	0.8	7.1	9.2	0.8	11.5	9.2	1.3	9.2
97	18.7	0.8	93.5	15.6	1.1	78.0	8.2	1.6	65.6	16.0	0.4	12.0	24.6	0.3	30.8	27.4	0.4	27.4
97A	8.5	1.4	42.5	5.9	1.8	29.5	3.1	2.6	24.8	8.1	0.9	6.1	19.2	0.4	24.0	9.2	1.3	9.2
98	12.6	1.0	63.0	9.7	1.3	48.5	7.0	1.7	56.0	10.8	0.7	8.1	13.2	0.5	16.5	13.2	0.9	13.2

Tracked Vehicles

Terrain Types	M548 Speed mph	M548 Fuel Consumption gal/mile	M548 Delivery ton-mph	M113A1 Speed mph	M113A1 Fuel Consumption gal/mile	M113A1 Delivery ton-mph	M116 Speed mph	M116 Fuel Consumption gal/mile	M116 Delivery ton-mph	M571 Speed mph	M571 Fuel Consumption gal/mile	M571 Delivery ton-mph
96A	9.3	1.7	55.8	10.3	0.8	18.5	10.9	1.3	16.4	9.7	0.6	9.7
97	10.5	1.2	63.0	24.8	0.8	41.7	20.8	0.7	31.2	14.8	0.4	14.8
97A	7.5	1.7	45.0	11.1	1.2	19.7	19.4	0.9	29.1	11.4	0.6	11.4
98	9.4	1.8	56.4	12.1	1.1	23.9	11.4	1.2	17.1	12.0	0.5	17.0

Table 4

Predicted Vehicle Performance on Selected Terrain

	Dry Season (60 or 40 RCI)								Wet Season (60 or 40 RCI)								Wet Season (60 or 35 RCI)							
Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
M656	2	900	0.17		49	12.6	0.17	1.0	2	1,500	0.28		81	12.6	0.28	1.0	2	1,500	0.28		81	12.6	0.28	1.0
	10	200	0.04		8	16.2	0.03	0.8	10	300	0.06		13	16.2	0.05	0.8	10	300	0.06		13	16.2	0.05	0.8
	52	2,700	0.51		101	18.3	0.36	0.7	52	2,500	0.47		93	18.3	0.33	0.7	52	2,500	0.47		93	18.3	0.33	0.7
	10	2,700	0.51		114	16.2	0.41	0.8	10	2,500	0.47		105	16.2	0.38	0.8	10	2,500	0.47		105	16.2	0.38	0.8
	3	300	0.06		11	18.3	0.04	0.7	3	800	0.15		30	18.3	0.10	0.7	3	800	0.15		30	18.3	0.10	0.7
	10	2,300	0.44		97	16.2	0.35	0.8	10	5,400	1.02		227	16.2	0.82	0.8	10	5,400	1.02		227	16.2	0.82	0.8
	6	600	0.11		31	13.2	0.11	1.0	15	800	0.15		60	9.1	0.20	1.3	15	800	0.15		68	8.0	0.23	1.5
	10	6,500	1.23		274	16.2	0.38	0.8	10	900	0.17		38	16.2	0.14	0.8	10	900	0.17		38	16.2	0.14	0.8
	6	400	0.08		21	13.2	0.08	1.0	6	2,000	0.38		100	13.6	0.38	1.0	6	2,000	0.38		100	13.6	0.38	1.0
	10	800	0.15		34	16.2	0.12	0.8	15	1,100	0.21	1200	1,282	9.1	2.40	1.3	15	1,100	0.21	1200	1294	8.0	2.45	1.5
	10	2,700	0.51	17	131	16.2	0.41	0.8	6	700	0.13		36	13.2	0.13	1.0	6	700	0.13		36	13.2	0.13	1.0
	14	500	0.09		36	9.0	0.13	1.4	15	300	0.06		22	9.1	0.08	1.3	15	300	0.06		26	8.0	0.09	1.5
	10	600	0.11		25	16.2	0.09	0.8	6	1,900	0.36		98	13.2	0.36	1.0	6	1,900	0.36		98	13.2	0.36	1.0
	6	800	0.15		41	13.2	0.15	1.0	15	900	0.17		67	9.1	0.22	1.3	15	900	0.17		77	8.0	0.26	1.5
	6	1,300	0.25		67	13.2	0.25	1.0	10	300	0.06		13	16.2	0.05	0.8	10	300	0.06		13	16.2	0.05	0.8
	10	1,200	0.23		51	16.2	0.18	0.8	6	2,100	0.40		108	13.2	0.40	1.0	6	2,100	0.40		108	13.2	0.40	1.0
	6	600	0.11		31	13.2	0.11	1.0	10	1,000	0.19		42	16.2	0.15	0.8	10	1,000	0.19		42	16.2	0.15	0.8
	10	2,500	0.47		105	16.2	0.38	0.8	6	600	0.11		31	13.2	0.11	1.0	6	600	0.11		31	13.2	0.11	1.0
	3	2,100	0.40		78	18.3	0.28	0.7	15	2,400	0.45		180	9.1	0.59	1.3	15	2,400	0.45		205	8.0	0.68	1.5
	3	600	0.11		22	18.3	0.08	0.7	3	2,800	0.53		104	18.3	0.37	0.7	3	2,800	0.53		104	18.3	0.37	0.7
	10	2,300	0.44	2400	2,497	16.2	4.61	0.8	15	2,300	0.43	2400	2,576	9.1	4.82	1.3	15	2,300	0.43	2400	2596	8.0	4.90	1.5
	3	1,300	0.25		48	18.3	0.17	0.7	3	1,100	0.21		41	18.3	0.15	0.7	3	1,100	0.21		41	18.3	0.15	0.7
	10	2,500	0.47		105	16.2	0.36	0.8	15	4,100	0.77		307	9.1	1.00	1.3	15	4,100	0.77		349	8.0	1.16	1.5
	21	400	0.08		17	16.2	0.06	0.8	10	300	0.06		13	16.2	0.05	0.8	10	300	0.06		13	16.2	0.05	0.8
	85	700	0.13		27	17.4	0.11	0.8	15	900	0.17		67	9.1	0.22	1.3	15	900	0.17		77	8.0	0.26	1.5
	10	1,900	0.36	17	97	16.2	0.29	0.8	10	200	0.04		8	16.2	0.03	0.8	10	200	0.04		8	16.2	0.03	0.8
	28	300	0.06		11	18.3	0.04	0.7	49	1,100	0.21		57	13.2	0.23	1.1	49	1,100	0.21		57	13.2	0.23	1.1
	28	5,000	0.95		186	18.3	0.66	0.7	6	700	0.13		36	13.2	0.13	1.0	6	700	0.13		36	13.2	0.13	1.0
	88	400	0.08		15	18.7	0.06	0.8	28	1,400	0.26		52	18.3	0.18	0.7	28	1,400	0.26		52	18.3	0.18	0.7
	88	900	0.17		33	18.7	0.14	0.8	6	2,300	0.43		119	13.2	0.43	1.0	6	2,300	0.43		119	13.2	0.43	1.0
	6	2,400	0.45		124	13.2	0.45	1.0	89	700	0.13		55	8.7	0.20	1.5	89	700	0.13		55	8.7	0.20	1.5
	37	600	0.11	1200	1,222	18.7	2.22	0.8	6	4,800	0.91		248	13.2	0.91	1.0	6	4,800	0.91		248	13.2	0.91	1.0
	32	1,200	0.23		8,184	0.1	0.75	3.3	30	1,000	0.19		6,835	0.1	0.63	3.3	30	1,000	0.19	17	6835	0.1	0.63	3.3
	3	1,600	0.30		60	18.3	0.21	0.7	3	1,600	0.30		60	18.3	0.21	0.7	3	1,600	0.30		60	18.3	0.21	0.7
	3	1,700	0.32		63	18.3	0.22	0.7	30	1,200	0.23	17	8,182	0.1	0.76	3.3	30	1,200	0.23		8182	0.1	0.76	3.3
	37	900	0.17		33	18.7	0.14	0.8	37	4,600	0.87		168	18.7	0.70	0.8	37	4,600	0.87		168	18.7	0.70	0.8
	37	200	0.04		7	18.7	0.03	0.8	82	1,000	0.19		73	9.3	0.27	1.4	82	1,000	0.19		73	9.3	0.27	1.4
	14	1,700	0.32		129	9.0	0.45	1.4	14	1,500	0.28		114	9.0	0.39	1.4	14	1,500	0.28		114	9.0	0.39	1.4
	14	1,200	0.23		91	9.0	0.32	1.4	15	300	0.06		22	9.1	0.08	1.3	15	300	0.06		26	8.0	0.09	1.5
	10	2,000	0.38		84	16.2	0.30	0.8	10	1,700	0.32		72	16.2	0.26	0.8	10	1,700	0.32		72	16.2	0.26	0.8
	14	800	0.15		61	9.0	0.21	1.4	14	400	0.08		30	9.0	0.11	1.4	14	400	0.08		30	9.0	0.11	1.4
	82	1,900	0.36		139	9.3	0.50	1.4	15	400	0.08		30	9.1	0.10	1.3	15	400	0.08		34	8.0	0.12	1.5
	14	300	0.06		23	9.0	0.08	1.4	82	1,900	0.36		139	9.3	0.50	1.4	82	1,900	0.36		139	9.3	0.50	1.4
	10	700	0.13		29	16.2	0.11	0.8	14	300	0.06		23	9.0	0.08	1.4	14	300	0.06		23	9.0	0.08	1.4
	3	1,000	0.19		37	18.3	0.13	0.7	15	700	0.13		52	9.1	0.17	1.3	15	700	0.13		60	8.0	0.20	1.5
	10	4,300	0.81		181	16.2	0.65	0.8	3	1,000	0.19		37	18.3	0.13	0.7	3	1,000	0.19		37	18.3	0.13	0.7
	23	1,900	0.36		51	25.2	0.14	0.4	15	4,400	0.83		330	9.1	1.08	1.3	15	4,400	0.83		375	8.0	1.24	1.5
	3	700	0.13		26	18.3	0.09	0.7	23	1,700	0.32		46	25.2	0.13	0.4	23	1,700	0.32		46	25.2	0.13	0.4
	57	700	0.13		36	13.3	0.13	1.0	16	600	0.11		45	9.1	0.14	1.3	16	600	0.11		50	8.2	0.15	1.4
	57	700	0.13		36	13.3	0.13	1.0	57	7,400	1.40		379	13.3	1.40	1.0	57	7,400	1.40		379	13.3	1.40	1.0

(Continued)

Table 4 (Continued)

	Dry Season (60 or 40 RCI)								Wet Season (60 or 40 RCI)								Wet Season (60 or 35 RCI)							
Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	32	400	0.08		2,728	0.1	0.25	3.3	30	500	0.09	1200	4,609	0.1	2.43	3.3	30	500	0.09	1200	4609	0.1	2.43	3.3
	2	900	0.17		49	12.6	0.17	1.0	2	800	0.15		43	12.6	0.15	1.0	2	800	0.15	—	43	12.6	0.15	1.0
	16	500	0.09		37	9.1	0.12	1.3	16	500	0.09		37	9.1	0.12	1.3	16	500	0.09		42	8.2	0.13	1.4
	30	200	0.04		1,364	0.1	0.12	3.3	30	400	0.08		2,727	0.1	0.26	3.3	30	400	0.08		2727	0.1	0.26	3.3
	3	700	0.13		26	18.3	0.09	0.7	3	600	0.11		22	18.3	0.08	0.7	3	600	0.11		22	18.3	0.08	0.7
	2	1,100	0.21		60	12.6	0.21	1.0	2	1,100	0.21		60	12.6	0.21	1.0	2	1,100	0.21		60	12.6	0.21	1.0
	3	500	0.09		19	18.3	0.07	0.7	3	400	0.08		15	18.3	0.06	0.7	3	400	0.08		15	18.3	0.06	0.7
	32	1,900	0.36	1200	14,158	0.1	3.32	3.3	30	1,900	0.36		12,954	0.1	1.19	3.3	30	1,900	0.36		12,954	0.1	1.19	3.3
	3	500	0.09		19	18.3	0.07	0.7	3	600	0.11		22	18.3	0.08	0.7	3	600	0.11		22	18.3	0.08	0.7
	2	700	0.13		38	12.6	0.13	1.0	2	800	0.15		43	12.6	0.15	1.0	2	800	0.15		43	12.6	0.15	1.0
	3	2,100	0.40		78	18.3	0.28	0.7	3	2,100	0.40		78	18.3	0.28	0.7	3	2,100	0.40		78	18.3	0.28	0.7
	5	700	0.13		19	25.2	0.05	0.4	5	4,300	0.81		116	25.2	0.32	0.4	5	4,300	0.81		116	25.2	0.32	0.4
	5	3,700	0.70		[illegible]	25.2	0.28	0.4	73A	900	0.17		67	9.1	0.24	1.4	73A	900	0.17		77	8.0	0.26	1.5
	73	800	0.15		31	17.4	0.12	0.8	3	7,000	1.32		261	18.3	0.92	0.7	3	7,000	1.32		261	18.3	0.92	0.7
	3	1,300	0.25		48	18.3	0.17	0.7	15	5,200	0.98		390	9.1	1.27	1.3	15	5,200	0.98		443	8.0	1.47	1.5
	3	4,400	0.83		164	18.3	0.58	0.7	10	500	0.09		21	16.2	0.07	0.8	10	500	0.09		21	16.2	0.07	0.8
	3	1,200	0.23		45	18.3	0.16	0.7	15	3,700	0.70		277	9.1	0.91	1.3	15	3,700	0.70		315	8.0	1.05	1.5
	10	700	0.13		29	16.2	0.11	0.8	10	2,800	0.53		118	16.2	0.42	0.8	10	2,800	0.53		118	16.2	0.42	0.8
	10	1,700	0.32		72	16.2	0.26	0.8	3	2,400	0.45		89	18.3	0.32	0.7	3	2,400	0.45		89	18.3	0.32	0.7
	10	3,100	0.59		131	16.2	0.47	0.8	69	100	0.02		4	16.2	0.02	0.8	69	100	0.02		4	16.2	0.02	0.8
	15	3,800	0.72		285	9.1	0.93	1.3	94	400	0.08		30	9.1	0.10	1.3	94	400	0.08		34	8.0	0.12	1.5
	10	2,600	0.49		109	16.2	0.39	0.8	81	1,500	0.28		77	13.2	0.28	1.0	81	1,500	0.28		77	13.2	0.28	1.0
	3	2,700	0.51		101	18.3	0.36	0.7	69	1,200	0.23		50	16.2	0.18	0.8	69	1,200	0.23		50	16.2	0.18	0.8
	69	500	0.09		21	16.2	0.08	0.8	17	100	0.02		4	18.7	0.02	0.8	17	100	0.02		4	18.7	0.02	0.8
	81	1,500	0.28		78	13.2	0.28	1.0	69	800	0.15		34	16.2	0.12	0.8	69	800	0.15		34	16.2	0.12	0.8
	69	900	0.17		38	16.2	0.14	0.8	17	300	0.06		11	18.7	0.05	0.8	17	300	0.06		11	18.7	0.05	0.8
	69	300	0.06		13	16.2	0.05	0.8	25	800	0.15		41	13.2	0.15	1.0	25	800	0.15		41	13.2	0.15	1.0
	17	300	0.06		11	18.7	0.05	0.8	81	900	0.17		46	13.2	0.17	1.0	81	900	0.17		46	13.2	0.17	1.0
	69	200	0.04		8	16.2	0.03	0.8	25	700	0.13		36	13.2	0.13	1.0	25	700	0.13		36	13.2	0.13	1.0
	17	300	0.06		11	18.7	0.05	0.8	15	1,300	0.25		97	9.1	0.32	1.3	15	1,300	0.25		111	8.0	0.38	1.5
	25	800	0.15		41	13.2	0.15	1.0	6	100	0.02		5	13.2	0.02	1.0	6	100	0.02		5	13.2	0.02	1.0
	81	700	0.13		36	13.2	0.13	1.0	62	6,700	1.27		346	13.2	1.40	1.1	62	6,700	1.27		346	13.2	1.40	1.1
	25	1,000	0.19		52	13.2	0.19	1.0	36A	300	0.06		17	12.0	0.07	1.2	36A	300	0.06		26	8.0	0.09	1.5
	10	1,200	0.23		51	16.2	0.18	0.8	15	600	0.11		45	9.1	0.14	1.3	15	600	0.11		51	8.0	0.16	1.5
	62	7,000	1.32		362	13.2	1.46	1.1	63	300	0.06		15	13.2	0.06	1.0	63	300	0.06		15	13.2	0.06	1.0
	36	200	0.04		8	16.2	0.03	0.8	62	1,100	0.21		57	13.2	0.23	1.1	62	1,100	0.21		57	13.2	0.23	1.1
	10	600	0.11		25	16.2	0.09	0.8	63	1,000	0.19		52	13.2	0.19	1.0	63	1,000	0.19		52	13.2	0.19	1.0
	63	400	0.08		21	13.2	0.08	1.0	62	1,000	0.19		52	13.2	0.21	1.1	62	1,000	0.19		52	13.2	0.21	1.1
	62	1,100	0.21		57	13.2	0.23	1.1	63	4,600	0.87		238	13.2	0.87	1.0	63	4,600	0.87		238	13.2	0.87	1.0
	63	1,000	0.19		52	13.2	0.19	1.0	80	1,400	0.26		105	9.1	0.34	1.3	80	1,400	0.26		119	8.0	0.39	1.5
	62	900	0.17		47	13.2	0.19	1.1	31	600	0.11		22	18.3	0.08	0.7	31	600	0.11		22	18.3	0.08	0.7
	63	4,600	0.87		[illegible]	13.2	0.87	1.0	80	1,400	0.26		105	9.1	0.34	1.3	80	1,400	0.26		119	8.0	0.39	1.5
	55	1,200	0.23		51	16.2	0.18	0.8	31	3,500	0.66		130	18.3	0.46	0.7	31	3,500	0.66		130	18.3	0.46	0.7
	55	300	0.06		13	16.2	0.05	0.8	10	1,200	0.23		50	16.2	0.18	0.8	10	1,200	0.23		50	16.2	0.18	0.8
	31	800	0.15		30	18.3	0.11	0.7	15	400	0.08		30	9.1	0.10	1.3	15	400	0.08		34	8.0	0.12	1.5
	55	1,000	0.19		42	16.2	0.15	0.8	31	2,100	0.40		78	18.3	0.28	0.7	31	2,100	0.40		78	18.3	0.28	0.7
	31	3,600	0.68		134	18.3	0.48	0.7	10	1,700	0.32		72	16.2	0.26	0.8	10	1,700	0.32		72	16.2	0.26	0.8
	10	1,600	0.30		67	16.2	0.24	0.8	19	3,900	0.74		98	27.2	0.15	0.2	19	3,900	0.74		98	27.2	0.15	0.2
	31	600	0.11		22	18.3	0.08	0.7	10	1,800	0.34		76	16.2	0.27	0.8	10	1,800	0.34		76	16.2	0.27	0.8
	10	2,200	0.42		93	16.2	0.33	0.8	15	1,100	0.21	1200	1,282	9.1	2.40	1.3	15	1,100	0.21	1200	1294	8.0	2.45	1.5

(Continued)

Table 4 (Continued)

Dry Season (60 or 40 RCI)

Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	10	1,100	0.21		46	16.2	0.17	0.8
	19	3,600	0.68		90	27.2	0.14	0.2
	19	200	0.04		5	27.2	0.01	0.2
	10	1,700	0.32		72	16.2	0.26	0.8
	15	200	0.04	1200	1,215	9.1	2.18	1.3
	15	900	0.17		67	9.1	0.22	1.3
	10	3,400	0.64		143	16.2	0.51	0.8
	3	800	0.15		30	18.3	0.11	0.7
	3	1,300	0.25		48	18.3	0.17	0.7
	3	900	0.17		34	18.3	0.12	0.7
	21	500	0.09		21	16.2	0.08	0.8
	3	4,200	0.79		157	18.3	0.56	0.7
	21	400	0.08		17	16.2	0.06	0.8
	22	1,500	0.28		112	9.1	0.37	1.3
	21	500	0.09		21	16.2	0.08	0.8
	22	1,300	0.25		97	9.1	0.32	1.3
	21	500	0.09		21	16.2	0.08	0.8
	22	1,900	0.36		142	9.1	0.47	1.3
	2	500	0.09		27	12.6	0.09	1.0
	15	600	0.11		45	9.1	0.15	1.3
	28	1,400	0.26	1200	1,252	18.3	2.32	0.7
	28	1,300	0.25		48	18.3	0.17	0.7
	3	3,900	0.74		145	18.3	0.52	0.7
	10	2,200	0.42		93	16.2	0.33	0.8
	3	800	0.15		30	18.3	0.11	0.7
	10	800	0.15		34	16.2	0.12	0.8
	3	1,100	0.21		41	18.3	0.15	0.7
	10	200	0.04		8	16.2	0.03	0.8
	10	700	0.13		29	16.2	0.11	0.8
	15	5,000	0.95	17	392	9.1	1.23	1.3
	3	500	0.09		19	18.3	0.07	0.7
	10	200	0.04		8	16.2	0.03	0.8
	10	200	0.04		8	16.2	0.03	0.8
	3	1,800	0.34		67	18.3	0.24	0.7
	3	100	0.02		4	18.3	0.01	0.7
	10	500	0.09		21	16.2	0.08	0.8
	15	1,000	0.19		75	9.1	0.25	1.3
	16	500	0.09		37	9.1	0.12	1.3
	3	700	0.13	1200	1,226	18.3	2.22	0.7
	3	5,500	1.04		205	18.3	0.73	0.7
	69	1,700	0.32		72	16.2	0.26	0.8
	69	100	0.02		4	16.2	0.02	0.8
	13	2,900	0.55		19,778	0.1	1.81	3.3
	10	600	0.11		25	16.2	0.09	0.8
	3	700	0.13		26	18.3	0.09	0.7
	10	2,000	0.38		84	16.2	0.30	0.8
	4	1,300	0.25		63	14.1	0.22	0.9
	14	3,500	0.66		265	9.0	0.93	1.4
	1	700	0.13		52	9.1	0.17	1.3
	4	600	0.11		29	14.1	0.10	0.9
	4	4,600	0.87		222	14.1	0.78	0.9
	4	1,200	0.23		58	14.1	0.20	0.9
	3	800	0.15		30	18.3	0.11	0.7
	3	3,000	0.57		112	18.3	0.40	0.7
	4	4,800	0.91	1200	1,432	14.1	2.95	0.9

Wet Season (60 or 40 RCI)

Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	10	2,900	0.55		122	16.2	0.44	0.8
	15	600	0.11		45	9.1	0.14	1.3
	3	2,300	0.43		86	18.3	0.30	0.7
	21	600	0.11		25	16.2	0.09	0.8
	3	4,100	0.77		153	18.3	0.54	0.7
	21	600	0.11		25	16.2	0.09	0.8
	22	1,500	0.28		112	9.1	0.36	1.3
	21	500	0.09		21	16.2	0.07	0.8
	22	1,300	0.25		97	9.1	0.32	1.3
	21	500	0.09		21	16.2	0.07	0.8
	22	2,000	0.38		150	9.1	0.49	1.3
	2	300	0.06		16	12.6	0.06	1.0
	29	600	0.11		45	9.1	0.14	1.3
	28	3,000	0.57	1200	1,312	18.3	2.53	0.7
	3	2,300	0.43		86	18.3	0.30	0.7
	21	300	0.06		13	16.2	0.05	0.8
	3	1,000	0.19		37	18.3	0.13	0.7
	10	2,300	0.43		97	16.2	0.34	0.8
	3	800	0.15		30	18.3	0.10	0.7
	10	800	0.15		34	16.2	0.12	0.8
	3	1,000	0.19		37	18.3	0.13	0.7
	10	2,100	0.40		88	16.2	0.32	0.8
	15	5,000	0.94		375	9.1	1.22	1.3
	10	100	0.02		4	16.2	0.02	0.8
	3	400	0.08		15	18.3	0.06	0.7
	10	400	0.08		17	16.2	0.06	0.8
	3	900	0.17		34	18.3	0.12	0.7
	10	500	0.09		21	16.2	0.07	0.8
	3	500	0.09		19	18.3	0.06	0.7
	10	300	0.06		13	16.2	0.05	0.8
	15	300	0.06		22	9.1	0.08	1.3
	10	100	0.02		4	16.2	0.02	0.8
	3	7,600	1.44	34	317	18.3	1.01	0.7
	15	400	0.08		30	9.1	0.10	1.3
	3	1,900	0.36		71	18.3	0.25	0.7
	94	500	0.09		37	9.1	0.12	1.3
	69	1,400	0.26		59	16.2	0.21	0.8
	13	3,000	0.57		20,454	0.1	1.88	3.3
	10	1,000	0.19		42	16.2	0.15	0.8
	3	200	0.04		7	18.3	0.03	0.7
	15	1,800	0.34		135	9.1	0.44	1.3
	1	1,300	0.25		97	9.1	0.32	1.3
	4	100	0.02		5	14.1	0.02	0.9
	14	3,500	0.66		265	9.0	0.92	1.4
	1	7,400	1.40		554	9.1	1.82	1.3
	3	2,800	0.53		104	18.3	0.37	0.7
	16	700	0.13		52	9.1	0.17	1.3
	3	200	0.04		7	18.3	0.03	0.7
	1	4,800	0.91	1200	1,560	9.1	3.31	1.3
	13	300	0.06		2,045	0.1	0.20	3.3
	3	8,100	1.53		302	18.3	1.07	0.7
	1	1,200	0.23		58	14.1	0.21	0.9
	1	500	0.09		37	9.1	0.12	1.3
	3	100	0.02		4	18.3	0.01	0.7
	2	500	0.09		27	12.6	0.09	1.0

Wet Season (60 or 35 RCI)

Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	10	2,900	0.55		122	16.2	0.44	0.8
	15	600	0.11		51	8.0	0.16	1.5
	3	2,300	0.43		86	18.3	0.30	0.7
	21	600	0.11		25	16.2	0.09	0.8
	3	4,100	0.77		153	18.3	0.54	0.7
	21	600	0.11		25	16.2	0.09	0.8
	22	1,500	0.28		128	8.0	0.42	1.5
	21	500	0.09		21	16.2	0.07	0.8
	22	1,300	0.25		111	8.0	0.38	1.5
	21	500	0.09		21	16.2	0.07	0.8
	22	2,000	0.38		1700	8.0	0.57	1.5
	2	300	0.06		16	12.6	0.06	1.0
	29	600	0.11		50	8.2	0.15	1.4
	28	3,000	0.57	1200	1312	18.3	2.53	0.7
	3	2,300	0.43		86	18.3	0.30	0.7
	21	300	0.06		13	16.2	0.05	0.8
	3	1,000	0.19		37	18.3	0.13	0.7
	10	2,300	0.43		97	16.2	0.34	0.8
	3	800	0.15		30	18.3	0.10	0.7
	10	800	0.15		34	16.2	0.12	0.8
	3	1,000	0.19		37	18.3	0.13	0.7
	10	2,100	0.40		88	16.2	0.32	0.8
	15	5,000	0.94		426	8.0	1.41	1.5
	10	100	0.02		4	16.2	0.02	0.8
	3	400	0.08		15	[illegible]	[illegible]	0.7
	10	400	0.08		17	16.2	[illegible]	0.8
	3	900	0.17		34	18.3	0.12	0.7
	10	500	0.09		21	16.2	0.07	0.8
	3	500	0.09		19	18.3	0.06	0.7
	10	300	0.06		13	16.2	0.05	0.8
	15	300	0.06		26	8.0	0.09	1.5
	10	100	0.02		4	16.2	0.02	0.8
	3	7,600	1.44	34	317	18.3	1.01	0.7
	15	400	0.08		34	8.0	0.12	1.5
	3	1,900	0.36		71	18.3	0.25	0.7
	94	500	0.09		43	8.0	0.14	1.5
	69	1,400	0.26		59	16.2	0.21	0.8
	13	3,000	0.57		20,454	0.1	1.88	3.3
	10	1,000	0.19		42	16.2	0.15	0.8
	3	200	0.04		7	18.3	0.03	0.7
	15	1,800	0.34		153	8.0	0.51	1.5
	1	1,300	0.25		111	8.0	0.38	1.5
	4	100	0.02		5	14.1	0.02	0.9
	14	3,500	0.66		265	9.0	0.92	1.4
	1	7,400	1.40		631	8.0	2.10	1.5
	3	2,800	0.53		104	18.3	0.37	0.7
	16	700	0.13		58	8.2	0.18	1.4
	3	200	0.04		7	18.3	0.03	0.7
	1	4,800	0.91	1200	1609	8.0	3.49	1.5
	13	300	0.06		2045	0.1	0.20	3.3
	3	8,100	1.53		302	18.3	1.07	0.7
	4	1,200	0.23		58	14.1	0.21	0.9
	1	500	0.09		43	8.0	0.14	1.5
	3	100	0.02		4	18.3	0.01	0.7
	2	500	0.09		27	12.6	0.09	1.0

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI)								Wet Season (60 or 40 RCI)								Wet Season (60 or 35 RCI)							
	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	13	300	0.06		2,046	0.1	0.19	3.3																
	3	4,500	0.85		168	18.3	0.60	0.7																
	3	2,100	0.40		78	18.3	0.28	0.7																
	4	3,700	0.70		179	14.1	0.63	0.9																
	2	400	0.08		22	12.6	0.08	1.0																
	Totals	237,400	44.91		67,210		58.52			251,000	47.43		77,641		63.84			251,000	47.43		78,321		65.32	
M54A2	2	500	0.09		35	9.7	0.12	1.3	2	1,500	0.28		105	9.7	0.36	1.3	2	1,500	0.28		105	9.7	0.36	1.3
	10	700	0.13		48	10.0	0.17	1.3	10	300	0.06		20	10.0	0.08	1.3	10	300	0.06		20	10.0	0.08	1.3
	52	2,600	0.49		177	10.0	0.89	1.8	52	2,600	0.49		177	10.0	0.88	1.8	52	2,600	0.49		177	10.0	0.88	1.8
	10	200	0.04		14	10.0	0.05	1.3	10	2,700	0.51		184	10.0	0.66	1.3	10	2,700	0.51		184	10.0	0.66	1.3
	10	2,700	0.51		184	10.0	0.66	1.3	3	400	0.08		27	10.0	0.10	1.3	3	400	0.08		27	10.0	0.10	1.3
	3	300	0.06		20	10.0	0.07	1.3	10	300	0.06		20	10.0	0.08	1.3	10	300	0.06		20	10.0	0.08	1.3
	10	2,300	0.43		157	10.0	0.57	1.3	6	2,300	0.43		178	8.8	0.60	1.4	6	2,300	0.43		178	8.8	0.60	1.4
	6	500	0.09	17	56	8.8	0.13	1.4	15	700	0.13		66	7.2	0.20	1.5	15	700	0.13		77	6.2	0.21	1.6
	10	6,600	1.25		450	10.0	1.62	1.3	10	2,100	0.40		143	10.0	0.52	1.3	10	2,100	0.40		143	10.0	0.52	1.3
	6	400	0.08		31	8.8	0.11	1.4	6	7,400	1.40		573	8.8	1.96	1.4	6	7,400	1.40		573	8.8	1.96	1.4
	10	700	0.13		48	10.0	0.17	1.3	15	1,600	0.30	1200	1352	7.2	2.81	1.5	15	1,600	0.30	1200	1376	6.2	2.84	1.6
	10	2,700	0.51		184	10.0	0.66	1.3	6	300	0.06		23	8.8	0.08	1.4	6	300	0.06		23	8.8	0.08	1.4
	14	500	0.09		45	7.6	0.14	1.5	15	1,200	0.23		114	7.2	0.34	1.5	15	1,200	0.23		132	6.2	0.37	1.6
	10	700	0.13		48	10.0	0.17	1.3	10	2,100	0.40		143	10.0	0.52	1.3	10	2,100	0.40		143	10.0	0.52	1.3
	6	700	0.13		54	8.8	0.18	1.4	14	600	0.11		54	7.6	0.16	1.5	14	600	0.11		54	7.6	0.16	1.5
	6	1,400	0.26		109	8.8	0.37	1.4	15	600	0.11		57	7.2	0.16	1.5	15	600	0.11		66	6.2	0.18	1.6
	10	1,100	0.21		75	10.0	0.27	1.3	6	2,200	0.42		170	8.8	0.59	1.4	6	2,200	0.42		170	8.8	0.59	1.4
	6	700	0.13		54	8.8	0.18	1.4	10	1,200	0.23		82	10.0	0.30	1.3	10	1,200	0.23		82	10.0	0.30	1.3
	10	2,400	0.45		164	10.0	0.59	1.3	6	600	0.11		46	8.8	0.15	1.4	6	600	0.11		46	8.8	0.15	1.4
	3	2,200	0.42		150	10.0	0.54	1.3	15	2,400	0.45		227	7.2	0.68	1.5	15	2,400	0.45		264	6.2	0.72	1.6
	3	500	0.09		34	10.0	0.12	1.3	3	3,400	0.64		232	10.0	0.83	1.3	3	3,400	0.64		232	10.0	0.83	1.3
	10	2,300	0.43		157	10.0	0.57	1.3	2	900	0.17		63	9.7	0.22	1.3	2	900	0.17		63	9.7	0.22	1.3
	3	400	0.08		27	10.0	0.10	1.3	15	6,100	1.15	2400	2978	7.2	6.44	1.5	15	6,100	1.15	2400	3071	6.2	6.56	1.6
	3	700	0.13		48	10.0	0.17	1.3	10	600	0.11		41	10.0	0.14	1.3	10	600	0.11		41	10.0	0.14	1.3
	10	2,700	0.51		184	10.0	0.66	1.3	15	700	0.13		66	7.2	0.20	1.5	15	700	0.13		77	6.2	0.21	1.6
	21	300	0.06	2400	2,420	10.0	4.79	1.3	10	300	0.06		20	10.0	0.08	1.3	10	300	0.06		20	10.0	0.08	1.3
	85	700	0.13		38	12.7	0.12	0.9	49	1,000	0.19		59	11.6	0.23	1.2	49	1,000	0.19		59	11.6	0.23	1.2
	10	1,900	0.36	17	147	10.0	0.47	1.3	6	800	0.15		62	8.8	0.21	1.4	6	800	0.15		62	8.8	0.21	1.4
	28	200	0.04		14	10.0	0.05	1.3	28	700	0.13		48	10.0	0.17	1.3	28	700	0.13		48	10.0	0.17	1.3
	28	5,100	0.96		348	10.0	1.26	1.3	6	2,900	0.55		225	8.8	0.77	1.4	6	2,900	0.55		225	8.8	0.77	1.4
	88	600	0.11		26	15.6	0.12	1.1	89	600	0.11		55	7.4	0.16	1.5	89	600	0.11		55	7.4	0.16	1.5
	88	800	0.15		35	15.6	0.17	1.1	6	600	0.11		46	8.8	0.15	1.4	6	600	0.11		46	8.8	0.15	1.4
	6	2,200	0.42		171	8.8	0.58	1.4	30	1,200	0.23		8182	0.1	0.64	2.8	30	1,200	0.23		8182	0.1	0.64	2.8
	6	200	0.04		16	8.8	0.05	1.4	3	2,500	0.47	17	187	10.0	0.61	1.3	3	2,500	0.47	17	187	10.0	0.61	1.3
	37	700	0.13		31	15.6	0.14	1.1	37	600	0.11		26	15.6	0.12	1.1	37	600	0.11		26	15.6	0.12	1.1
	32	1,200	0.23	1200	9,384	0.1	3.00	2.8	40	300	0.06		25	8.2	0.09	1.5	40	300	0.06		25	8.2	0.09	1.5
	3	1,500	0.28		102	10.0	0.37	1.3	11	1,900	0.36		162	8.0	0.54	1.5	11	1,900	0.36		162	8.0	0.54	1.5
	3	1,700	0.32		116	10.0	0.42	1.3	32	500	0.09		3409	0.1	0.25	2.8	32	500	0.09		3409	0.1	0.25	2.8
	83	900	0.17		81	7.6	0.29	1.7	3	2,100	0.40		143	10.0	0.52	1.3	3	2,100	0.40		143	10.0	0.52	1.3
	63	200	0.04		18	7.6	0.06	1.7	87	1,100	0.21		101	7.4	0.32	1.5	87	1,100	0.21		101	7.4	0.32	1.5
	14	1,400	0.26		126	7.6	0.40	1.5	14	3,300	0.62		296	7.6	0.93	1.5	14	3,300	0.62		296	7.6	0.93	1.5
	14	1,500	0.28		135	7.6	0.43	1.5	15	100	0.02		9	7.2	0.03	1.5	15	100	0.02		11	6.2	0.03	1.6
	10	1,900	0.36		130	10.0	0.47	1.3	10	1,900	0.36		130	10.0	0.47	1.3	10	1,900	0.36		130	10.0	0.47	1.3
	14	900	0.17		81	7.6	0.26	1.5	14	300	0.06		27	7.6	0.09	1.5	14	300	0.06		27	7.6	0.09	1.5
	82	1,900	0.36		166	7.8	0.57	1.6	10	400	0.08		27	10.0	0.10	1.3	10	400	0.08		27	10.0	0.10	1.3

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 35 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	14	200	0.04		18	7.6	0.06	1.5	82	1,900	0.36		166	7.8	0.58	1.6	82	1,900	0.36		166	7.8	0.58	1.6
	10	700	0.13		48	10.0	0.17	1.3	14	300	0.06		27	7.6	0.09	1.5	14	300	0.06		27	7.6	0.09	1.5
	3	1,000	0.19		68	10.0	0.25	1.3	15	800	0.15		76	7.2	0.22	1.5	15	800	0.15		88	6.2	0.24	1.6
	10	2,600	0.49		177	10.0	0.64	1.3	10	800	0.15		55	10.0	0.20	1.3	10	800	0.15		55	10.0	0.20	1.3
	23	3,600	0.68		150	16.4	0.68	1.0	15	4,300	0.81		407	7.2	1.22	1.5	15	4,300	0.81		473	6.2	1.30	1.6
	3	700	0.13		48	10.0	0.17	1.3	23	5,400	1.02		224	16.4	1.02	1.0	23	5,400	1.02		224	16.4	1.02	1.0
	57	6,500	1.23		493	9.0	1.60	1.3	3	300	0.06		20	10.0	0.08	1.3	3	300	0.06		20	10.0	0.08	1.3
	57	900	0.17		68	9.0	0.22	1.3	23	600	0.11		25	16.4	0.11	1.0	23	600	0.11		25	16.4	0.11	1.0
	32	400	0.08		2,728	0.1	0.21	2.8	3	600	0.11		41	10.0	0.14	1.3	3	600	0.11		41	10.0	0.14	1.3
	2	900	0.17		63	9.7	0.22	1.3	57	5,000	0.94		379	9.0	1.22	1.3	57	5,000	0.94		379	9.0	1.22	1.3
	16	500	0.09		47	7.2	0.14	1.5	2	1,600	0.30		112	9.7	0.39	1.3	2	1,600	0.30		112	9.7	0.39	1.3
	30	200	0.04		1,364	0.1	0.10	2.8	30	6,200	1.17	2400	46,672	0.1	8.00	2.8	30	6,200	1.17	2400	46,672	0.1	8.00	2.8
	3	700	0.13		48	10.0	0.17	1.3	3	500	0.09		34	10.0	0.12	1.3	3	500	0.09		34	10.0	0.12	1.3
	2	1,100	0.21		77	9.7	0.27	1.3	2	700	0.13		49	9.7	0.17	1.3	2	700	0.13		49	9.7	0.17	1.3
	3	500	0.09		34	10.0	0.12	1.3	3	2,100	0.40		143	10.0	0.52	1.3	3	2,100	0.40		143	10.0	0.52	1.3
	32	1,900	0.36	1200	14,158	0.1	3.37	2.8	5	4,300	0.81		180	16.3	0.81	1.0	5	4,300	0.81		180	16.3	0.81	1.0
	3	500	0.09		34	10.0	0.12	1.3	73A	800	0.15		83	6.6	0.21	1.4	73A	800	0.15		88	6.2	0.24	1.6
	2	300	0.06		21	9.7	0.07	1.3	3	6,700	1.27		457	10.0	1.65	1.3	3	6,700	1.27		457	10.0	1.65	1.3
	2	400	0.08		28	9.7	0.10	1.3	15	6,100	1.15		578	7.2	1.72	1.5	15	6,100	1.15		671	6.2	1.84	1.6
	3	2,200	0.42		150	10.0	0.54	1.3	10	400	0.08		27	10.0	0.10	1.3	10	400	0.08		27	10.0	0.10	1.3
	5	600	0.11		25	16.3	0.11	1.0	15	3,700	0.70		350	7.2	1.05	1.5	15	3,700	0.70		407	6.2	1.12	1.6
	5	3,800	0.72		159	16.3	0.72	1.0	10	2,800	0.53		191	10.0	0.69	1.3	10	2,800	0.53		191	10.0	0.69	1.3
	73	700	0.13		48	10.0	0.37	2.8	3	2,500	0.47		170	10.0	0.61	1.3	3	2,500	0.47		170	10.0	0.61	1.3
	3	1,200	0.23		82	10.0	0.30	1.3	69	300	0.06		20	10.0	0.08	1.3	69	300	0.06		20	10.0	0.08	1.3
	3	4,600	0.87		314	10.0	1.13	1.3	94	300	0.06		28	7.2	0.09	1.5	94	300	0.06		33	6.2	0.10	1.6
	3	1,200	0.23		82	10.0	0.30	1.3	81	1,400	0.26		108	8.8	0.36	1.4	81	1,400	0.26		108	8.8	0.36	1.4
	10	800	0.15		55	10.0	0.20	1.3	69	400	0.08		27	10.0	0.10	1.3	69	400	0.08		27	10.0	0.10	1.3
	10	1,800	0.34		123	10.0	0.44	1.3	81	900	0.17		70	8.8	0.24	1.4	81	900	0.17		70	8.8	0.24	1.4
	10	3,000	0.57		205	10.0	0.74	1.3	69	300	0.06		20	10.0	0.08	1.3	69	300	0.06		20	10.0	0.08	1.3
	15	3,700	0.70		351	7.2	1.05	1.5	17	400	0.08		17	15.6	0.09	1.1	17	400	0.08		17	15.6	0.09	1.1
	10	1,200	0.23		82	10.0	0.30	1.3	25	1,000	0.19		77	8.8	0.27	1.4	25	1,000	0.19		77	8.8	0.27	1.4
	57	600	0.11		45	9.0	0.15	1.3	81	800	0.15		62	8.8	0.21	1.4	81	800	0.15		62	8.8	0.21	1.4
	10	700	0.13		48	10.0	0.17	1.3	25	600	0.11		46	8.8	0.15	1.4	25	600	0.11		46	8.8	0.15	1.4
	3	2,700	0.51		184	10.0	0.66	1.3	15	1,200	0.23		114	7.2	0.34	1.5	15	1,200	0.23		132	6.2	0.37	1.6
	69	500	0.09		34	10.0	0.12	1.3	6	300	0.06		23	8.8	0.08	1.4	6	300	0.06		23	8.8	0.08	1.4
	81	1,600	0.30		124	8.8	0.42	1.4	62	6,600	1.25		388	11.6	1.50	1.2	62	6,600	1.25		388	11.6	1.50	1.2
	69	700	0.13		48	10.0	0.17	1.3	36A	100	0.02		9	7.4	0.03	1.6	36A	100	0.02		26	2.6	0.04	2.1
	69	200	0.04		14	10.0	0.05	1.3	15	700	0.13		66	7.2	0.20	1.5	15	700	0.13		77	6.2	0.21	1.6
	81	600	0.11		46	8.8	0.16	1.4	63	400	0.08		31	8.8	0.11	1.4	63	400	0.08		31	8.8	0.11	1.4
	69	400	0.08		27	10.0	0.10	1.3	62	1,000	0.19		59	11.6	0.23	1.2	62	1,000	0.19		59	11.6	0.23	1.2
	17	400	0.08		17	15.6	0.08	1.1	63	1,000	0.19		77	8.8	0.27	1.4	63	1,000	0.19		77	8.8	0.27	1.4
	25	900	0.17		70	8.8	0.24	1.4	62	800	0.15		47	11.6	0.18	1.2	62	800	0.15		47	11.6	0.18	1.2
	81	1,000	0.19		78	8.8	0.26	1.4	63	4,900	0.93		380	8.8	1.30	1.4	63	4,900	0.93		380	8.8	1.30	1.4
	25	700	0.13		54	8.8	0.18	1.4	80	1,500	0.28		142	7.2	0.42	1.5	80	1,500	0.28		165	6.2	0.45	1.6
	10	1,200	0.23		82	10.0	0.30	1.3	31	800	0.15		55	10.0	0.20	1.3	31	800	0.15		55	10.0	0.20	1.3
	6	200	0.04		16	8.8	0.05	1.4	80	900	0.17		85	7.2	0.26	1.5	80	900	0.17		99	6.2	0.27	1.6
	62	6,700	1.27		394	11.6	1.52	1.2	31	3,700	0.70		252	10.0	0.91	1.3	31	3,700	0.70		252	10.0	0.91	1.3
	36	300	0.06		19	11.0	0.06	1.1	10	1,200	0.23		82	10.0	0.30	1.3	10	1,200	0.23		82	10.0	0.30	1.3
	10	500	0.09		34	10.0	0.12	1.3	15	500	0.09		47	7.2	0.14	1.5	15	500	0.09		55	6.2	0.14	1.6
	63	500	0.09		39	8.8	0.13	1.4	31	2,100	0.40		143	10.0	0.52	1.3	31	2,100	0.40		143	10.0	0.52	1.3
	62	1,000	0.19		59	11.6	0.23	1.2	10	3,400	0.64		232	10.0	0.83	1.3	10	3,400	0.64		232	10.0	0.83	1.3
	63	900	0.17		70	8.8	0.24	1.4	2	2,800	0.53		197	9.7	0.69	1.3	2	2,800	0.53		197	9.7	0.69	1.3
	62	800	0.15		47	11.6	0.18	1.2	10	300	0.06		20	10.0	0.08	1.3	10	300	0.06		20	10.0	0.08	1.3
	63	4,900	0.93		380	8.8	1.30	1.4	15	1,000	0.19	1200	1295	7.2	2.64	1.5	15	1,000	0.19	1200	1310	6.2	2.66	1.6
	55	1,100	0.21		75	10.0	0.27	1.3	10	2,900	0.55		198	10.0	0.72	1.3	10	2,900	0.55		198	10.0	0.72	1.3

(Continued)

Table 4 (Continued)

	Dry Season (60 or 40 RCI)								Wet Season (60 or 40 RCI)								Wet Season (60 or 35 RCI)								
Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	55	300	0.06		20	10.0	0.07	1.3	15	500	0.09		47	7.2	0.14	1.5	15	500	0.09		55	6.2	0.14	1.6
	31	800	0.15		55	10.0	0.20	1.3	3	3,100	0.59		211	10.0	0.77	1.3	3	3,100	0.59		211	10.0	0.77	1.3
	55	1,000	0.19		68	10.0	0.25	1.3	21	500	0.09		34	10.0	0.12	1.3	21	500	0.09		34	10.0	0.12	1.3
	31	3,600	0.68		246	10.0	0.88	1.3	3	1,400	0.26		95	10.0	0.34	1.3	3	1,400	0.26		95	10.0	0.34	1.3
	10	1,700	0.32		116	10.0	0.42	1.3	28	900	0.17		61	10.0	0.22	1.3	28	900	0.17		61	10.0	0.22	1.3
	31	2,200	0.42		150	10.0	0.54	1.3	3	2,100	0.40		143	10.0	0.52	1.3	3	2,100	0.40		143	10.0	0.52	1.3
	10	400	0.08		27	10.0	0.10	1.3	15	400	0.08		38	7.2	0.12	1.5	15	400	0.08		44	6.2	0.13	1.6
	10	1,100	0.21		75	10.0	0.27	1.3	22	6,700	1.27		634	7.2	1.90	1.5	22	6,700	1.27		737	6.2	2.03	1.6
	19	3,600	0.68		104	23.5	0.41	0.6	21	7,400	1.40		505	10.0	1.82	1.3	21	7,400	1.40		505	10.0	1.82	1.3
	19	200	0.04		6	23.5	0.02	0.6	3	1,900	0.36		130	10.0	0.47	1.3	3	1,900	0.36		130	10.0	0.47	1.3
	10	1,700	0.32		116	10.0	0.42	1.3	10	1,500	0.28		102	10.0	0.36	1.3	10	1,500	0.28		102	10.0	0.36	1.3
	15	200	0.04	1200	1,219	7.2	2.42	1.5	3	1,200	0.23		82	10.0	0.30	1.3	3	1,200	0.23		82	10.0	0.30	1.3
	15	800	0.15		76	7.2	0.23	1.5	10	1,000	0.19		68	10.0	0.25	1.3	10	1,000	0.19		68	10.0	0.25	1.3
	10	3,500	0.66		239	10.0	0.86	1.3	3	1,000	0.19		68	10.0	0.25	1.3	3	1,000	0.19		68	10.0	0.25	1.3
	3	600	0.11		41	10.0	0.15	1.3	10	1,300	0.25		89	10.0	0.32	1.3	10	1,300	0.25		89	10.0	0.32	1.3
	3	1,700	0.32		116	10.0	0.42	1.3	15	5,000	0.94		473	7.2	1.41	1.5	15	5,000	0.94		550	6.2	1.50	1.6
	3	800	0.15		55	10.0	0.20	1.3	3	500	0.09		34	10.0	0.12	1.3	3	500	0.09		34	10.0	0.12	1.3
	21	400	0.08		27	10.0	0.10	1.3	10	400	0.08		27	10.0	0.10	1.3	10	400	0.08		27	10.0	0.10	1.3
	3	4,300	0.81		293	10.0	1.06	1.3	3	1,800	0.34		123	10.0	0.44	1.3	3	1,800	0.34		123	10.0	0.44	1.3
	10	300	0.06		20	10.0	0.07	1.3	10	300	0.06		20	10.0	0.08	1.3	10	300	0.06		20	10.0	0.08	1.3
	22	1,600	0.30		152	7.2	0.46	1.5	15	400	0.08		38	7.2	0.12	1.5	15	400	0.08		44	6.2	0.13	1.6
	21	400	0.08		27	10.0	0.10	1.3	10	100	0.02		7	10.0	0.03	1.3	10	100	0.02		7	10.0	0.03	1.3
	22	1,300	0.25		123	7.2	0.37	1.5	3	5,100	0.96	1200	1548	10.0	3.61	1.3	3	5,100	0.96	1200	1548	10.0	3.61	1.3
	21	500	0.09		34	10.0	0.12	1.3	15	400	0.08		38	7.2	0.12	1.5	15	400	0.08		44	6.2	0.13	1.6
	22	1,900	0.36		180	7.2	0.54	1.5	3	1,800	0.34		123	10.0	0.44	1.3	3	1,800	0.34		123	10.0	0.44	1.3
	2	500	0.09		35	9.7	0.12	1.3	94	700	0.13		66	7.2	0.20	1.5	94	700	0.13		77	6.2	0.21	1.6
	15	600	0.11		57	7.2	0.17	1.5	69	1,200	0.23		82	10.0	0.30	1.3	69	1,200	0.23		82	10.0	0.30	1.3
	28	1,400	0.26	1200	1,295	10.0	2.70	1.3	13	3,000	0.57		20,454	0.1	1.60	2.8	13	3,000	0.57		20,454	0.1	1.60	2.8
	28	1,400	0.26		95	10.0	0.34	1.3	10	500	0.09		34	10.0	0.12	1.3	10	500	0.09		34	10.0	0.12	1.3
	3	3,800	0.72		259	10.0	0.94	1.3	3	700	0.13		48	10.0	0.17	1.3	3	700	0.13		48	10.0	0.17	1.3
	10	1,700	0.32		116	10.0	0.42	1.3	15	1,900	0.36		180	7.2	0.54	1.5	15	1,900	0.36		209	6.2	0.58	1.6
	3	1,200	0.23		82	10.0	0.29	1.3	1	1,600	0.30		152	7.2	0.45	1.5	1	1,600	0.30		176	6.2	0.48	1.6
	10	400	0.08		27	10.0	0.10	1.3	14	9,000	1.70		807	7.6	2.55	1.5	14	9,000	1.70		807	7.6	2.55	1.5
	3	1,200	0.23		82	10.0	0.30	1.3	1	800	0.15		76	7.2	0.22	1.5	1	800	0.15		88	6.2	0.24	1.6
	10	1,500	0.28		102	10.0	0.37	1.3	3	2,800	0.53		191	10.0	0.69	1.3	3	2,800	0.53		191	10.0	0.69	1.3
	15	1,700	0.32		161	7.2	0.48	1.5	16	200	0.04		19	7.2	0.06	1.5	16	200	0.04		22	6.2	0.06	1.6
	15	3,500	0.66		332	7.2	0.99	1.5	3	400	0.08	1200	1227	10.0	2.46	1.3	3	400	0.08	1200	1227	10.0	2.46	1.3
	3	500	0.09		34	10.0	0.12	1.3	1	2,000	0.38		189	7.2	0.57	1.5	1	2,000	0.38	—	220	6.2	0.61	1.6
	10	400	0.08		27	10.0	0.10	1.3	3	1,400	0.26		95	10.0	0.34	1.3	3	1,400	0.26		95	10.0	0.34	1.3
	3	600	0.11		41	10.0	0.15	1.3	1	2,300	0.43		218	7.2	0.64	1.5	1	2,300	0.43		253	6.2	0.69	1.6
	3	1,000	0.19		68	10.0	0.25	1.3	5	1,500	0.28		63	16.3	0.28	1.0	5	1,500	0.28		63	16.3	0.28	1.0
	3	400	0.08		27	10.0	0.10	1.3	3	5,100	0.96		348	10.0	1.25	1.3	3	5,100	0.96		348	10.0	1.25	1.3
	10	300	0.06		20	10.0	0.07	1.3	4	1,600	0.30		140	7.8	0.45	1.5	4	1,600	0.30		140	7.8	0.45	1.5
	15	600	0.11		57	7.2	0.17	1.5	1	1,400	0.26		133	7.2	0.39	1.5	1	1,400	0.26		154	6.2	0.42	1.6
	15	1,400	0.26		133	7.2	0.40	1.5	2	1,400	0.26		98	9.7	0.34	1.3	2	1,400	0.26		98	9.7	0.34	1.3
	3	300	0.06	2400	2,420	10.0	4.79	1.3																
	10	600	0.11		41	10.0	0.15	1.3																
	3	3,900	0.74		266	10.0	0.96	1.3																
	69	2,100	0.40		143	10.0	0.52	1.3																
	13	3,000	0.57		20,460	0.1	1.59	2.8																
	10	400	0.08		27	10.0	0.10	1.3																
	3	800	0.15		55	10.0	0.20	1.3																
	10	1,800	0.34		123	10.0	0.44	1.3																
	4	1,400	0.26		122	7.8	0.40	1.5																
	14	3,400	0.64		305	7.6	0.96	1.5																

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 35 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	1	800	0.15		76	7.2	0.23	1.5																
	4	700	0.13		61	7.8	0.20	1.5																
	4	4,600	0.87		402	7.8	1.31	1.5																
	4	1,300	0.25		114	7.8	0.37	1.5																
	3	800	0.15		55	10.0	0.20	1.3																
	3	2,900	0.55		198	10.0	0.71	1.3																
	4	4,700	0.89	1200	1,611	7.8	3.70	1.5																
	13	300	0.06		2,046	0.1	0.16	2.8																
	3	4,600	0.87		314	10.0	1.13	1.3																
	3	2,100	0.40		143	10.0	0.52	1.3																
	4	3,700	0.70		324	7.8	1.05	1.5																
	2	600	0.11		42	9.7	0.15	1.3																
Totals		243,600	46.03		75,473		84.44			257,000	48.57		104,621		88.07			257,[illegible]	48.57		105,542		89.24	
M520	2	1,100	0.21		107	7.0	0.35	1.7	2	1,600	0.30		156	7.0	0.51	1.7	2	1,600	0.30		156	7.0	0.51	1.7
	10	2,100	0.40		199	7.2	0.64	1.6	10	2,000	0.38		189	7.2	0.61	1.6	10	2,000	0.38		189	7.2	0.61	1.6
	52	700	0.13		66	7.2	0.21	1.6	52	700	0.13		66	7.2	0.21	1.6	52	700	0.13		66	7.2	0.21	1.6
	10	2,900	0.55		275	7.2	0.83	1.6	10	4,600	0.87		436	7.2	1.30	1.6	10	4,600	0.87		436	7.2	1.39	1.6
	10	2,800	0.53		265	7.2	0.85	1.6	15	800	0.15		84	6.5	0.27	1.8	15	800	0.15		176	3.1	0.39	2.6
	6	300	0.06		30	6.8	0.10	1.8	10	400	0.08		38	7.2	0.13	1.6	10	400	0.08		38	7.2	0.13	1.6
	10	6,500	1.23	17	633	7.2	1.97	1.6	6	300	0.06		30	6.8	0.11	1.8	6	300	0.06		30	6.8	0.11	1.8
	5	500	0.09		50	6.8	0.17	1.8	15	1,500	0.23		157	6.5	0.50	1.8	15	1,500	0.28		330	3.1	0.73	2.0
	10	1,400	0.26		133	7.2	0.42	1.6	10	600	0.11		57	7.2	0.18	1.6	10	600	0.11		57	7.2	0.18	1.6
	6	2,300	0.44		231	6.8	0.78	1.8	15	4,400	0.83	1200	1662	6.5	2.77	1.8	15	4,400	0.83	1200	2168	3.1	3.44	2.6
	4	200	0.04		21	6.5	0.07	1.8	6	400	0.08		40	6.8	0.14	1.8	6	400	0.08		40	6.8	0.14	1.8
	10	1,200	0.23		114	7.2	0.36	1.6	15	1,600	0.30		168	6.5	0.54	1.8	15	1,600	0.30		352	3.1	0.78	2.6
	6	1,000	0.19		100	6.8	0.34	1.8	10	400	0.08		38	7.2	0.13	1.6	10	400	0.08		38	7.2	0.13	1.6
	10	700	0.13		66	7.2	0.21	1.6	6	700	0.13		70	6.8	0.23	1.8	6	700	0.13		70	6.8	0.23	1.8
	6	1,800	0.34		181	6.8	0.61	1.8	14	1,700	0.32		203	5.7	0.67	2.1	14	1,700	0.32		203	5.7	0.67	2.1
	10	2,100	0.40		199	7.2	0.64	1.6	15	900	0.17		94	6.5	0.31	1.8	15	900	0.17		198	3.1	0.44	2.6
	3	2,900	0.55		275	7.2	0.88	1.6	6	1,000	0.19		100	6.8	0.34	1.8	6	1,000	0.19		100	6.8	0.34	1.8
	10	2,100	0.40	2400	2,599	7.2	3.20	1.6	10	1,600	0.30		152	7.2	0.48	1.6	10	1,600	0.30		152	7.2	0.48	1.6
	3	1,200	0.23		114	7.2	0.36	1.6	6	1,400	0.26		140	6.8	0.47	1.8	6	1,400	0.26		140	6.8	0.47	1.8
	37	800	0.15		78	7.0	0.24	1.6	10	1,200	0.23		114	7.2	0.37	1.6	10	1,200	0.23		114	7.2	0.37	1.6
	10	2,500	0.47		237	7.2	0.76	1.6	14	1,100	0.21		132	5.7	0.44	2.1	14	1,100	0.21		132	5.7	0.44	2.1
	85	800	0.15		70	7.8	0.23	1.5	3	900	0.17		85	7.2	0.27	1.6	3	900	0.17		85	7.2	0.27	1.6
	85	200	0.04		17	7.8	0.06	1.5	58	1,700	0.32	1200	1349	7.8	1.76	1.5	58	1,700	0.32	1200	1349	7.8	1.76	1.5
	10	1,100	0.21	17	121	7.2	0.33	1.5	15	1,400	0.26	1200	1347	6.5	1.75	1.8	15	1,400	0.26	1200	1508	3.1	1.96	2.6
	49	1,100	0.21		101	7.4	0.35	1.7	2	1,000	0.19		97	7.0	0.32	1.7	2	1,000	0.19		97	7.0	0.32	1.7
	6	300	0.06		30	6.8	0.10	1.8	30	1,200	0.23		134	6.1	0.44	1.9	30	1,200	0.23		282	2.9	0.76	3.3
	28	800	0.15		76	7.2	0.24	1.6	32	2,300	0.43		224	7.0	0.69	1.6	32	2,300	0.43		224	7.0	0.69	1.5
	3	1,000	0.19		95	7.2	0.30	1.6	3	3,400	0.64		322	7.2	1.02	1.6	3	3,400	0.64		322	7.2	1.02	1.6
	28	600	0.11		57	7.2	0.18	1.6	36A	600	0.11		59	6.9	0.20	1.8	36A	600	0.11		256	1.6	0.33	3.0
	6	1,700	0.32		171	6.8	0.58	1.8	36	800	0.15		66	8.2	0.24	1.6	36	800	0.15		66	8.2	0.24	1.6
	28	900	0.17		85	7.2	0.27	1.6	15	1,900	0.36		199	6.5	0.65	1.8	15	1,900	0.36		418	3.1	0.94	2.6
	6	2,300	0.44		231	6.8	0.78	1.8	6	700	0.13		70	6.8	0.23	1.8	6	700	0.13		70	6.8	0.23	1.8
	32	3,300	0.62	17	339	7.0	1.00	1.6	89	800	0.15		97	5.6	0.32	2.1	89	800	0.15		97	5.6	0.32	2.1
	3	200	0.04		19	7.2	0.06	1.6	6	1,300	0.25		130	6.8	0.45	1.8	6	1,300	0.25		130	6.8	0.45	1.8
	83	1,300	0.25		108	5.7	0.52	2.1	30	400	0.08	17	63	6.1	0.13	1.9	30	400	0.08	17	111	2.9	0.26	3.3

(Continued)

Table 4 (Continued)

	Dry Season (60 or 40 RCI)								Wet Season (60 or 40 RCI)								Wet Season (60 or 35 RCI)							
Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	83	700	0.13		58	5.7	0.28	2.1	3	100	0.02		9	7.2	0.03	1.6	3	100	0.02		9	7.2	0.03	1.6
	82	1,000	0.19		120	5.7	0.38	2.0	90	600	0.11		59	7.0	0.19	1.7	90	600	0.11		59	7.0	0.19	1.7
	14	1,500	0.28		280	5.7	0.60	2.1	86	1,000	0.19		85	8.0	0.27	1.4	86	1,000	0.19		85	8.0	0.27	1.4
	10	2,100	0.40		199	7.2	0.64	1.6	37	300	0.06		25	8.2	0.10	1.6	37	300	0.06		25	8.2	0.10	1.6
	14	300	0.06		36	5.7	0.12	2.1	84	600	0.11		39	10.4	0.15	1.4	84	600	0.11		39	10.4	0.15	1.4
	10	500	0.09		47	7.2	0.15	1.6	37	200	0.04		17	8.2	0.06	1.6	37	200	0.04		17	8.2	0.06	1.6
	82	1,900	0.36		227	5.7	0.72	2.0	30	1,500	0.28		168	6.1	0.53	1.9	30	1,500	0.28		353	2.9	0.92	3.3
	14	200	0.04		24	5.7	0.08	2.1	37	1,100	0.21		91	8.2	0.34	1.6	37	1,100	0.21		91	8.2	0.34	1.6
	10	700	0.13		66	7.2	0.21	1.6	87	600	0.11		73	5.6	0.23	2.1	87	600	0.11		73	5.6	0.23	2.1
	3	1,100	0.21		104	7.2	0.33	1.6	14	2,900	0.55		347	5.7	1.16	2.1	14	2,900	0.55		347	5.7	1.16	2.1
	10	2,800	0.53		265	7.2	0.85	1.6	10	1,900	0.36		180	7.2	0.58	1.6	10	1,900	0.36		180	7.2	0.58	1.6
	10	1,500	0.28		142	7.2	0.45	1.6	14	300	0.06		36	5.7	0.13	2.1	14	300	0.06		36	5.7	0.13	2.1
	23	1,900	0.36		166	7.8	0.54	1.5	15	400	0.08		42	6.5	0.14	1.8	15	400	0.08		88	3.1	0.21	2.6
	3	700	0.13		66	7.2	0.21	1.6	82	2,000	0.38		239	5.7	0.76	2.0	82	2,000	0.38		239	5.7	0.76	2.0
	57	6,000	1.14		602	6.8	2.04	1.8	14	300	0.06		36	5.7	0.13	2.1	14	300	0.06		36	5.7	0.13	2.1
	32	1,600	0.30		156	7.0	0.48	1.6	15	600	0.11		63	6.5	0.20	1.8	15	600	0.11		132	3.1	0.29	2.6
	2	900	0.17		88	7.0	0.29	1.7	3	1,100	0.21		104	7.2	0.34	1.6	3	1,100	0.21		104	7.2	0.34	1.6
	16	500	0.09		52	6.5	0.17	1.8	15	4,300	0.81		451	6.5	1.46	1.8	15	4,300	0.81		946	3.1	2.11	2.6
	30	200	0.04		22	6.1	0.07	1.9	23	1,900	0.36		166	7.8	0.54	1.5	23	1,900	0.36		166	7.8	0.54	1.5
	3	700	0.13		66	7.2	0.21	1.6	16	800	0.15		84	6.5	0.27	1.8	16	800	0.15		136	4.0	0.39	2.6
	2	300	0.06		29	7.0	0.10	1.7	57	7,000	1.32		702	6.8	2.38	1.8	57	7,000	1.32		702	6.8	2.38	1.8
	3	1,000	0.19		95	7.2	0.30	1.6	30	600	0.11		67	6.1	0.21	1.9	30	600	0.11		141	2.9	0.36	3.3
	32	12,800	2.42	1200	2,447	7.0	5.15	1.6	2	900	0.17		88	7.0	0.29	1.7	2	900	0.17		88	7.0	0.29	1.7
	10	1,800	0.34		171	7.2	0.54	1.6	6	500	0.09		50	6.8	0.16	1.8	6	500	0.09		50	6.8	0.16	1.8
	10	3,600	0.63		341	7.2	1.09	1.6	30	300	0.06		34	6.1	0.11	1.9	30	300	0.06		71	2.9	0.20	3.3
	15	1,900	0.36		199	6.5	0.65	1.8	3	2,000	0.38		189	7.2	0.61	1.6	3	2,000	0.38		189	7.2	0.61	1.6
	15	1,700	0.32		178	6.5	0.58	1.8	30	12,800	2.42	1200	2631	6.1	5.88	1.9	30	12,800	2.42	1200	2631	2.9	9.27	3.3
	10	1,000	0.19		95	7.2	0.39	1.6	15	5,000	0.94		524	6.5	1.69	1.8	15	5,000	0.94		1100	3.1	2.44	2.6
	57	1,500	0.28		150	6.8	0.51	1.8	10	600	0.11		57	7.2	0.18	1.6	10	600	0.11		57	7.2	0.18	1.6
	3	2,800	0.53		265	7.2	0.85	1.6	15	3,600	0.68		378	6.5	1.22	1.8	15	3,600	0.68		792	3.1	1.77	2.6
	10	200	0.04		19	7.2	0.06	1.6	10	1,000	0.19		95	7.2	0.30	1.6	10	1,000	0.19		95	7.2	0.30	1.6
	10	100	0.02		9	7.2	0.03	1.6	57	1,200	0.23		120	6.8	0.41	1.8	57	1,200	0.23		120	6.8	0.41	1.8
	81	1,400	0.26		140	6.8	0.48	1.8	16	200	0.04		21	6.5	0.07	1.8	16	200	0.04		34	4.0	0.10	2.6
	69	1,300	0.25		123	7.2	0.39	1.6	3	2,800	0.53		265	7.2	0.85	1.6	3	2,800	0.53		265	7.2	0.85	1.6
	17	300	0.06		25	8.2	0.09	1.6	81	1,700	0.32		170	6.8	0.58	1.8	81	1,700	0.32		170	6.8	0.58	1.8
	25	1,200	0.23		120	6.8	0.41	1.8	69	300	0.06		28	7.2	0.10	1.6	69	300	0.06		28	7.2	0.10	1.6
	69	1,300	0.25		123	7.2	0.39	1.6	94	1,000	0.19		105	6.5	0.34	1.8	94	1,000	0.19		220	3.1	0.49	2.6
	10	2,200	0.42		208	7.2	0.67	1.6	17	500	0.09		42	8.2	0.14	1.6	17	500	0.09		42	8.2	0.14	1.6
	6	300	0.06		30	6.8	0.10	1.8	25	1,000	0.19		100	6.8	0.30	1.6	25	1,000	0.19		100	6.8	0.30	1.6
	62	2,700	0.51		245	7.4	0.87	1.7	69	1,700	0.32		161	7.2	0.51	1.6	69	1,700	0.32		161	7.2	0.51	1.6
	62	4,100	0.78		378	7.4	1.32	1.7	25	800	0.15		80	6.8	0.24	1.6	25	800	0.15		80	6.8	0.24	1.6
	10	900	0.17		85	7.2	0.27	1.6	10	1,100	0.21		104	7.2	0.34	1.6	10	1,100	0.21		104	7.2	0.34	1.6
	63	500	0.09		50	6.8	0.17	1.8	6	400	0.08		40	6.8	0.14	1.8	6	400	0.08		40	6.8	0.14	1.8
	62	2,400	0.45		221	7.4	0.77	1.7	62	6,900	1.30		636	7.4	2.21	1.7	62	6,900	1.30		636	7.4	2.21	1.7
	63	2,800	0.53		281	6.8	0.95	1.8	15	1,000	0.19		105	6.5	0.34	1.8	15	1,000	0.19		220	3.1	0.49	2.6
	63	1,600	0.30		160	6.8	0.54	1.8	63	500	0.09		50	6.8	0.16	1.8	63	500	0.09		50	6.8	0.16	1.8
	55	1,200	0.23		114	7.2	0.36	1.6	62	2,400	0.45		221	7.4	0.76	1.7	62	2,400	0.45		221	7.4	0.76	1.7
	31	1,100	0.21		104	7.2	0.33	1.6	63	4,500	0.85		451	6.8	1.53	1.8	63	4,500	0.85		451	6.8	1.53	1.8
	55	1,300	0.25		123	7.2	0.39	1.6	80	1,200	0.23		126	6.5	0.41	1.8	80	1,200	0.23		264	3.1	0.60	2.6
	31	2,500	0.47		237	7.2	0.76	1.6	31	1,000	0.19		95	7.2	0.30	1.6	31	1,000	0.19		95	7.2	0.30	1.6
	10	200	0.04		19	7.2	0.06	1.6	80	1,300	0.25		136	6.5	0.45	1.8	80	1,300	0.25		286	3.1	0.65	2.6
	31	500	0.09		47	7.2	0.15	1.6	31	3,200	0.61		303	7.2	0.96	1.6	31	3,200	0.61		303	7.2	0.96	1.6
	10	1,900	0.36		180	7.2	0.57	1.6	10	1,800	0.34		170	7.2	0.54	1.6	10	1,800	0.34		170	7.2	0.54	1.6
	31	1,000	0.19		95	7.2	0.30	1.6	31	1,200	0.23		114	7.2	0.37	1.6	31	1,200	0.23		114	7.2	0.37	1.6
	10	1,200	0.23		114	7.2	0.36	1.6	10	1,100	0.21		104	7.2	0.34	1.6	10	1,100	0.21		104	7.2	0.34	1.6

(Continued)

Table 4 (Continued)

Dry Season (60 or 40 RCI)

Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	31	200	0.04		19	7.2	0.06	1.6
	10	500	0.09		47	7.2	0.15	1.6
	31	200	0.04		19	7.2	0.06	1.6
	10	400	0.08		38	7.2	0.12	1.6
	19	1,800	0.34		82	15.0	0.24	0.7
	2	2,300	0.44		224	7.0	0.74	1.7
	10	900	0.17		85	7.2	0.27	1.6
	Lake	600	0.11	17	141	3.3	0.26	2.3
	15	700	0.13		73	6.5	0.24	1.8
	10	3,400	0.64		322	7.2	1.03	1.6
	3	2,400	0.45		227	7.2	0.73	1.6
	21	1,700	[illegible]		161	7.2	0.51	1.6
	3	3,700	0.70		351	7.2	1.12	1.6
	22	1,800	0.34		189	6.5	0.61	1.8
	21	400	0.08		38	7.2	0.12	1.6
	22	400	0.08		42	6.5	0.14	1.8
	22	1,100	0.21		115	6.5	0.37	1.8
	21	600	0.11		57	7.2	0.18	1.6
	22	2,500	0.47		262	6.5	0.85	1.8
	21	400	0.08	17	55	7.2	0.12	1.6
	3	800	0.15		75	7.2	0.24	1.6
	28	800	0.15		76	7.2	0.24	1.6
	3	1,300	0.25		123	7.2	0.39	1.6
	21	2,300	0.44		218	7.2	0.70	1.6
	3	1,000	0.19		95	7.2	0.30	1.6
	10	1,700	0.32		161	7.2	0.51	1.6
	3	1,000	0.19		95	7.2	0.30	1.6
	10	600	0.11		57	7.2	0.18	1.6
	3	1,200	0.23		114	7.2	0.36	1.6
	10	1,500	0.28		142	7.2	0.45	1.6
	15	2,900	0.55		304	6.5	0.99	1.8
	15	2,500	0.47		262	6.5	0.85	1.8
	3	600	0.11		57	7.2	0.18	1.6
	10	400	0.08		38	7.2	0.12	1.6
	3	1,800	0.34		171	7.2	0.54	1.6
	10	300	0.06		28	7.2	0.09	1.6
	15	400	0.08		42	6.5	0.14	1.8
	3	1,000	0.19		95	7.2	0.30	1.6
	3	7,200	1.36	1200	1,882	7.2	3.46	1.6
	69	1,200	0.23		114	7.2	0.36	1.6
	13	3,100	0.59		587	3.6	1.70	2.9
	10	500	0.09		47	7.2	0.15	1.6
	3	500	0.09		47	7.2	0.15	1.6
	3	1,700	0.32		161	7.2	0.51	1.6
	10	2,100	0.40		199	7.2	0.64	1.6
	4	1,800	0.34		189	6.5	0.61	1.8
	14	2,700	0.51		323	5.7	1.07	2.1
	14	3,100	0.59		371	5.7	1.23	2.1
	4	600	0.11		63	6.5	0.20	1.8
	14	1,600	0.30		191	5.7	0.64	2.1
	4	400	0.08		42	6.5	0.14	1.8
	14	1,100	0.21		132	5.7	0.44	2.1
	3	2,800	0.53		265	7.2	0.85	1.6
	4	2,900	0.55	1200	1,504	6.5	2.27	1.8
	3	1,400	0.26		133	7.2	0.42	1.6

Wet Season (60 or 40 RCI)

Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
31	800	0.15		76	7.2	0.24	1.6
10	600	0.11		57	7.2	0.18	1.6
19	1,700	0.32		77	15.0	0.22	0.7
2	2,400	0.45		234	7.0	0.76	1.7
10	300	0.06	1200	1228	7.2	1.38	1.6
15	1,100	0.21		115	6.5	0.38	1.8
10	3,000	0.57		284	7.2	0.91	1.6
15	400	0.08		42	6.5	0.14	1.8
3	2,300	0.43		218	7.2	0.69	1.6
21	1,200	0.23		114	7.2	0.37	1.6
3	4,300	0.81		407	7.2	1.30	1.6
15	800	0.15		84	6.5	0.27	1.8
22	1,000	0.19		105	6.5	0.34	1.8
21	400	0.08		38	7.2	0.13	1.6
22	2,000	0.38		210	6.5	0.68	1.8
21	200	0.04		19	7.2	0.06	1.6
22	2,300	0.43		241	6.5	0.77	1.8
21	500	0.09	1200	1247	7.2	1.42	1.6
3	3,000	0.57		284	7.2	0.91	1.6
21	2,300	0.43		218	7.2	0.69	1.6
3	1,100	0.21		104	7.2	0.34	1.6
10	1,800	0.34		170	7.2	0.54	1.6
3	800	0.15		76	7.2	0.24	1.6
10	1,000	0.19		95	7.2	0.30	1.6
3	1,100	0.21		104	7.2	0.34	1.6
10	1,200	0.23		114	7.2	0.37	1.6
15	5,200	0.98		545	6.5	1.76	1.8
10	1,000	0.19		95	7.2	0.30	1.6
3	800	0.15		76	7.2	0.24	1.6
10	700	0.13		66	7.2	0.21	1.6
3	400	0.08		38	7.2	0.13	1.6
10	300	0.06		28	7.2	0.10	1.6
15	300	0.06		31	6.5	0.11	1.8
10	100	0.02		9	7.2	0.03	1.6
3	4,800	0.91	1200	1654	7.2	2.74	1.6
16	700	0.13		66	7.2	0.23	1.8
3	2,800	0.53		265	7.2	0.85	1.6
94	1,200	0.23		126	6.5	0.41	1.8
13	3,000	0.57		568	3.6	1.65	2.9
10	600	0.11		57	7.2	0.18	1.6
3	700	0.13		66	7.2	0.21	1.6
15	2,000	0.38		210	6.5	0.68	1.8
1	1,800	0.34		189	6.5	0.61	1.8
4	200	0.04		21	6.5	0.07	1.8
14	5,800	1.10		694	5.7	2.31	2.1
4	600	0.11		63	6.5	0.20	1.8
14	1,600	0.30		191	5.7	0.63	2.1
1	300	0.06		31	6.5	0.11	1.8
14	1,200	0.23		144	5.7	0.48	2.1
3	2,800	0.53		265	7.2	0.85	1.6
1	700	0.13	1200	1273	6.5	1.51	1.8
4	100	0.02		10	6.5	0.04	1.8
3	300	0.06		28	7.2	0.10	1.6
1	1,800	0.34		189	6.5	0.61	1.8
3	1,300	0.25		123	7.2	0.40	1.6
1	2,100	0.40		220	6.5	0.72	1.8

Wet Season (60 or 35 RCI)

Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
31	800	0.15		76	7.2	0.24	1.6
10	600	0.11		57	7.2	0.18	1.6
19	1,700	0.32		77	15.0	0.22	0.7
2	2,400	0.45		234	7.0	0.76	1.7
10	300	0.06	1200	1228	7.2	1.38	1.6
15	1,100	0.21		242	3.1	0.55	2.6
10	3,000	0.57		284	7.2	0.91	1.6
15	400	0.08		88	3.1	0.21	2.6
3	2,300	0.43		218	7.2	0.69	1.6
21	1,200	0.23		114	7.2	0.37	1.6
3	4,300	0.81		407	7.2	1.30	1.6
15	800	0.15		176	3.1	0.39	2.6
22	1,000	0.19		220	3.1	0.49	2.6
21	400	0.08		38	7.2	0.13	1.6
22	2,000	0.38		440	3.1	0.99	2.6
21	200	0.04		19	7.2	0.06	1.6
22	2,300	0.43		506	3.1	1.12	2.6
21	500	0.09	1200	1247	7.2	1.42	1.6
3	3,000	0.57		284	7.2	0.91	1.6
21	2,300	0.43		218	7.2	0.69	1.6
3	1,100	0.21		104	7.2	0.34	1.6
10	1,800	0.34		170	7.2	0.54	1.6
3	800	0.15		76	7.2	0.24	1.6
10	1,000	0.19		95	7.2	0.30	1.6
3	1,100	0.21		104	7.2	0.34	1.6
10	1,200	0.23		114	7.2	0.37	1.6
15	5,200	0.98		1144	3.1	2.55	2.6
10	1,000	0.19		95	7.2	0.30	1.6
3	800	0.15		76	7.2	0.24	1.6
10	700	0.13		66	7.2	0.21	1.6
3	400	0.08		38	7.2	0.13	1.6
10	300	0.06		28	7.2	0.10	1.6
15	300	0.06		66	3.1	0.16	2.6
10	100	0.02		9	7.2	0.03	1.6
3	4,800	0.91	1200	1654	7.2	2.74	1.6
16	700	0.13		119	4.0	0.34	2.6
3	2,800	0.53		265	7.2	0.85	1.6
94	1,200	0.23		264	3.1	0.60	2.6
13	3,000	0.57		568	3.6	1.65	2.9
10	600	0.11		57	7.2	0.18	1.6
3	700	0.13		66	7.2	0.21	1.6
15	2,000	0.38		440	3.1	0.99	2.6
1	1,800	0.34		396	3.1	0.88	2.6
4	200	0.04		21	6.5	0.07	1.8
14	5,800	1.10		694	5.7	2.31	2.1
4	600	0.11		63	6.5	0.20	1.8
14	1,600	0.30		191	5.7	0.63	2.1
1	300	0.06		66	3.1	0.16	2.6
14	1,200	0.23		144	5.7	0.48	2.1
3	2,800	0.53		265	7.2	0.85	1.6
1	700	0.13	1200	1354	3.1	1.62	2.6
4	100	0.02		10	6.5	0.04	1.8
3	300	0.06		28	7.2	0.10	1.6
1	1,800	0.34		396	3.1	0.86	2.6
3	1,300	0.25		123	7.2	0.40	1.6

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 35 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	4	2,100	0.40		220	6.5	0.71	1.8	13	200	0.04		38	3.6	0.12	2.9	1	2,100	0.40		462	3.1	1.04	2.6
	13	200	0.04		38	3.6	0.11	2.9	3	3,400	0.64		322	7.2	1.02	1.6	13	200	0.04		38	3.6	0.12	2.9
	3	2,700	0.51		256	7.2	0.82	1.6	1	400	0.08		42	6.5	0.14	1.8	3	3,400	0.64		322	7.2	1.02	1.6
	3	500	0.09		47	7.2	0.15	1.6	4	600	0.11		63	6.5	0.20	1.8	1	400	0.08		88	3.1	0.21	2.6
	4	1,200	0.23		126	6.5	0.41	1.8	3	2,000	0.38		189	7.2	0.61	1.6	4	600	0.11		63	6.5	0.20	1.8
	3	1,900	0.36		180	7.2	0.57	1.6	4	1,000	0.19		105	6.5	0.34	1.8	3	2,000	0.38		189	7.2	0.61	1.6
	4	600	0.11		63	6.5	0.20	1.8	1	1,400	0.26		147	6.5	0.47	1.8	4	1,000	0.19		105	6.5	0.34	1.8
	4	2,000	0.38		210	6.5	0.68	1.8	3	300	0.06		28	7.2	0.10	1.6	1	1,400	0.26		308	3.1	0.68	2.6
	2	1,000	0.19		97	7.0	0.32	1.7	2	1,000	0.19		97	7.0	0.32	1.7	3	300	0.06		28	7.2	0.10	1.6
																	2	1,000	0.19		97	7.0	0.32	1.7
Totals		237,100	44.89		29,591		82.33			236,000	44.64		33,581		87.08			236,000	44.64		40,797		101.42	
M37B1	2	1,600	0.30		100	10.8	0.21	0.7									2	1,400	0.26		87	10.8	0.18	0.7
	10	1,900	0.36		120	10.8	0.25	0.7									10	300	0.06		20	10.8	0.04	0.7
	52	1,000	0.19		22	31.0	0.04	0.2									52	2,700	0.51		59	31.0	0.10	0.2
	10	1,400	0.26		87	10.8	0.18	0.7									10	1,500	0.28		93	10.8	0.20	0.7
	3	600	0.11		13	31.0	0.02	0.2									3	600	0.11		13	31.0	0.02	0.2
	10	3,500	0.66		220	10.8	0.46	0.7									10	3,100	0.59		197	10.8	0.41	0.7
	6	300	0.06		23	9.4	0.05	0.8									10	200	0.04		13	10.8	0.03	0.7
	10	4,100	0.77		257	10.8	0.54	0.7									10	200	0.04		13	10.8	0.03	0.7
	6	2,500	0.47		180	9.4	0.38	0.8									6	400	0.08		31	9.4	0.06	0.8
	10	1,200	0.23	17	94	10.8	0.16	0.7									10	2,500	0.47		57	10.8	0.33	0.7
	6	600	0.11		42	9.4	0.09	0.8									15	700	0.13		49	9.5	0.10	0.8
	10	800	0.15		50	10.8	0.10	0.7									10	800	0.15		50	10.8	0.10	0.7
	6	2,600	0.49		188	9.4	0.39	0.8									6	2,100	0.40		153	9.4	0.32	0.8
	10	3,000	0.57		190	10.8	0.40	0.7									15	1,200	0.23	1200	1287	9.5	1.18	0.8
	6	800	0.15		57	9.4	0.12	0.8									6	500	0.09		34	9.4	0.07	0.8
	10	1,400	0.26		87	10.8	0.18	0.7									15	800	0.15		57	9.5	0.12	0.8
	6	1,000	0.19		73	9.4	0.15	0.8									6	2,500	0.47		180	9.4	0.38	0.8
	10	1,400	0.26		87	10.8	0.18	0.7									15	1,200	0.23		87	9.5	0.18	0.8
	3	1,500	0.28		33	31.0	0.06	0.2									10	1,900	0.36		120	10.8	0.25	0.7
	2	1,000	0.19		63	10.8	0.13	0.7									6	800	0.15		57	9.4	0.12	0.8
	10	7,600	1.44	2400	2,880	10.8	3.01	0.7									15	1,200	0.23		87	9.5	0.18	0.8
	49	700	0.13		42	11.2	0.08	0.6									6	1,100	0.21		80	9.4	0.17	0.8
	6	800	0.15		57	9.4	0.12	0.8									15	1,300	0.25		95	9.5	0.20	0.8
	28	800	0.15		17	31.0	0.03	0.2									3	1,400	0.26		30	31.0	0.05	0.2
	6	2,800	0.53		203	9.4	0.42	0.8									2	900	0.17		57	10.8	0.12	0.7
	89	600	0.11		51	7.8	0.11	1.0									15	1,700	0.32	2400	2521	9.5	2.26	0.8
	6	800	0.15		57	9.4	0.12	0.8									3	900	0.17		20	31.0	0.03	0.2
	32	1,000	0.19	17	6,857	0.1	1.14	6.0									15	3,400	0.64		243	9.5	0.51	0.8
	3	2,300	0.43		50	31.0	0.09	0.2									16	300	0.06		26	8.2	0.05	0.9
	37	600	0.11		13	31.0	0.02	0.2									3	300	0.06		7	31.0	0.01	0.2
	40	400	0.08		33	8.8	0.06	0.8									10	200	0.04		13	10.8	0.03	0.7
	11	2,000	0.38		154	8.9	0.30	0.8									15	700	0.13		49	9.5	0.10	0.8
	32	300	0.06		2,160	0.1	0.36	6.0									10	400	0.08		27	10.8	0.06	0.7
	87	1,000	0.19		88	7.8	0.19	1.0									49	600	0.11		35	11.2	0.07	0.6
	14	5,500	1.04		576	6.5	1.25	1.2									6	1,000	0.19		73	9.4	0.15	0.8

(Continued)

Table 4 (Continued)

	Dry Season (60 or 40 RCI)								Wet Season (60 or 40 RCI)								Wet Season (50 or 35 RCI)							
Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	82	600	0.11		62	6.4	0.13	1.2									28	600	0.11		13	31.0	0.02	0.2
	14	300	0.06		33	6.5	0.07	1.2									6	2,800	0.53		293	9.4	0.42	0.8
	3	1,800	0.34		39	31.0	0.07	0.2									89	600	0.11		51	7.8	0.11	1.0
	10	600	0.11		37	10.8	0.08	0.7									6	1,000	0.19		73	9.4	0.15	0.8
	3	1,200	0.23		27	31.0	0.05	0.2									30	900	0.17	17	6,137	0.1	1.02	6.0
	10	3,700	0.70		233	10.8	0.49	0.7									3	1,900	0.36		42	31.0	0.07	0.2
	23	1,800	0.34		52	23.7	0.10	0.3									37	800	0.15		17	31.0	0.03	0.2
	3	800	0.15		17	31.0	0.03	0.2									40	300	0.06		25	8.2	0.05	0.8
	57	7,000	1.32		914	5.2	1.85	1.4									11	1,900	0.36		146	8.9	0.29	0.8
	32	500	0.09		3,240	0.1	0.54	6.0									32	300	0.06		2,160	0.1	0.36	6.0
	2	1,000	0.19		63	10.8	0.13	0.7									87	1,600	0.30		138	7.8	0.30	1.0
	16	400	0.08		32	9.0	0.06	0.8									14	5,500	1.04		576	6.5	1.25	1.2
	30	200	0.04		1,440	0.1	0.24	6.0									82	600	0.11		62	6.4	0.13	1.2
	3	800	0.15		17	31.0	0.03	0.2									14	300	0.06		33	6.5	0.07	1.2
	2	300	0.06		20	10.8	0.04	0.7									3	1,800	0.34		39	31.0	0.07	0.2
	3	1,200	0.23		27	31.0	0.05	0.2									15	500	0.11		42	9.5	0.09	0.8
	32	1,800	0.34	1200	13,440	0.1	3.04	6.0									3	2,100	0.40		46	31.0	0.08	0.2
	3	600	0.11		13	31.0	0.02	0.2									15	2,900	0.55		208	9.5	0.44	0.8
	2	700	0.13		43	10.8	0.09	0.7									23	2,000	0.38		58	23.7	0.11	0.3
	3	2,000	0.38		44	31.0	0.08	0.2									16	800	0.15		66	8.2	0.14	0.9
	5	3,100	0.59		103	20.7	0.18	0.3									57	7,000	1.32		914	5.2	1.85	1.4
	3	1,700	0.32		37	31.0	0.06	0.2									30	400	0.08		2,880	0.1	0.48	6.0
	73	300	0.06		17	12.4	0.03	0.5									2	1,000	0.19		63	10.8	0.13	0.7
	22	900	0.17		62	9.9	0.14	0.8									16	500	0.09		40	8.2	0.08	0.9
	16	1,400	0.26		104	9.0	0.21	0.8									30	200	0.04		1,440	0.1	0.24	6.0
	3	3,900	0.74		86	31.0	0.15	0.2									3	800	0.15		17	31.0	0.03	0.2
	10	1,000	0.19		63	10.8	0.13	0.7									2	400	0.08		27	10.8	0.06	0.7
	3	300	0.06		7	31.0	0.01	0.2									3	800	0.15		17	31.0	0.03	0.2
	15	300	0.06		22	9.9	0.05	0.8									30	3,700	0.70	2400	27,600	0.1	6.20	6.0
	10	2,500	0.47		157	10.8	0.33	0.7									3	400	0.08		9	31.0	0.02	0.2
	15	3,200	0.60		218	9.9	0.48	0.8									2	700	0.13		43	10.8	0.09	0.7
	10	1,000	0.19		63	10.8	0.13	0.7									3	1,900	0.36		42	31.0	0.07	0.2
	2	1,400	0.26		87	10.8	0.18	0.7									5	3,200	0.60		104	20.7	0.18	0.3
	3	3,000	0.57		66	31.0	0.11	0.2									3	1,700	0.32		37	31.0	0.06	0.2
	10	400	0.08		27	10.8	0.06	0.7									73A	400	0.08		27	10.5	0.06	0.7
	81	1,300	0.25		96	9.4	0.20	0.8									22	900	0.17		64	9.5	0.14	0.8
	69	1,400	0.26		87	10.8	0.18	0.7									16	1,500	0.28		123	8.2	0.25	0.9
	17	1,900	0.36		42	31.0	0.07	0.2									3	3,900	0.74		86	31.0	0.15	0.2
	69	1,600	0.30		100	10.8	0.21	0.7									15	1,200	0.23		87	9.5	0.18	0.8
	70	700	0.13		43	10.8	0.09	0.7									3	300	0.06		7	31.0	0.01	0.2
	69	300	0.06		20	10.8	0.04	0.7									15	400	0.08		30	9.5	0.06	0.8
	10	800	0.15		50	10.8	0.10	0.7									10	600	0.11		37	10.8	0.08	0.7
	6	700	0.13		50	9.4	0.10	0.8									15	1,500	0.28		106	9.5	0.22	0.8
	62	6,500	1.23		395	11.2	0.74	0.6									10	400	0.08		27	10.8	0.06	0.7
	6	300	0.06		23	9.4	0.05	0.8									15	3,200	0.60		227	9.5	0.48	0.8
	10	800	0.15		50	10.8	0.10	0.7									10	1,100	0.21		70	10.8	0.15	0.7
	63	400	0.08		31	9.4	0.06	0.8									2	1,400	0.26		87	10.8	0.18	0.7
	62	1,900	0.36		116	11.2	0.22	0.6									15	2,500	0.47		206	8.2	0.42	0.9
	63	3,700	0.70		268	9.4	0.56	0.8									3	2,300	0.43		50	31.0	0.09	0.2
	31	4,100	0.77		89	31.0	0.15	0.2									15	500	0.09		34	9.5	0.07	0.8
	55	1,000	0.19		63	10.8	0.13	0.7									81	1,200	0.23		83	9.4	0.18	0.8
	31	4,900	0.93		108	31.0	0.19	0.2									69	500	0.09		30	10.8	0.06	0.7
	10	1,800	0.34		113	10.8	0.24	0.7									94	1,000	0.19		83	8.2	0.17	0.9
	3	1,600	0.30		35	31.0	0.06	0.2									69	200	0.04		13	10.8	0.03	0.7
	16	400	0.08		32	9.0	0.06	0.8									17	1,700	0.32		37	31.0	0.06	0.2

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 35 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	15	1,700	0.32		116	9.9	0.26	0.8									94	200	0.04		18	8.2	0.04	0.9
	10	2,000	0.38		127	10.8	0.30	0.8									69	400	0.08		27	10.8	0.06	0.7
	15	2,800	0.53		193	9.9	0.42	0.8									94	300	0.06		26	8.2	0.05	0.9
	3	1,000	0.19		22	31.0	0.04	0.2									69	500	0.09		30	10.8	0.06	0.7
	15	1,500	0.28		102	9.9	0.22	0.8									70	800	0.15		50	10.8	0.10	0.7
	3	3,000	0.57		66	31.0	0.11	0.2									69	300	0.06		20	10.8	0.04	0.7
	10	1,700	0.32		107	10.8	0.22	0.7									10	800	0.15		50	10.8	0.10	0.7
	3	7,400	1.40		163	31.0	0.28	0.2									6	800	0.15		57	9.4	0.12	0.8
	21	600	0.11		37	10.8	0.08	0.7									62	6,300	1.19		382	11.2	0.71	0.6
	22	1,700	0.32		116	9.9	0.26	0.8									6	300	0.06		23	9.4	0.05	0.8
	21	600	0.11		37	10.8	0.08	0.7									15	800	0.15		57	9.5	0.12	0.8
	22	600	0.11		40	9.9	0.09	0.8									63	400	0.08		31	9.4	0.06	0.8
	21	600	0.11		37	10.8	0.08	0.7									62	1,900	0.36		116	11.2	0.22	0.6
	22	2,400	0.45		164	9.9	0.36	0.8									63	3,800	0.72		276	9.4	0.58	0.8
	3	2,100	0.40	17	63	31.0	0.08	0.2									31	4,000	0.76		88	31.0	0.15	0.2
	21	700	0.13		43	10.8	0.09	0.7									80	1,000	0.19		83	8.2	0.17	0.9
	3	9,100	1.72		200	31.0	0.34	0.2									31	4,100	0.77		89	31.0	0.15	0.2
	10	1,300	0.25		83	10.8	0.18	0.7									15	1,000	0.19		72	9.5	0.15	0.8
	15	5,000	0.94		342	9.9	0.75	0.8									10	900	0.17		57	10.8	0.12	0.7
	3	500	0.09		10	31.0	0.02	0.2									3	1,700	0.32		37	31.0	0.06	0.2
	10	400	0.08		27	10.8	0.06	0.7									16	400	0.08		35	8.2	0.07	0.9
	3	2,500	0.47		55	31.0	0.09	0.2									15	1,600	0.30		114	9.5	0.24	0.8
	10	200	0.04		13	10.8	0.03	0.7									10	2,000	0.38		127	10.8	0.27	0.7
	3	11,200	2.12	17	263	31.0	0.42	0.2									15	2,800	0.53		201	9.5	0.42	0.8
	69	1,900	0.36		120	10.8	0.25	0.7									3	1,000	0.19		22	31.0	0.04	0.2
	13	2,800	0.53		9,540	0.2	3.18	6.0									15	1,900	0.36		136	9.5	0.29	0.8
	10	400	0.08		27	10.8	0.06	0.7									3	3,100	0.59		69	31.0	0.12	0.2
	3	800	0.15		17	31.0	0.03	0.2									10	1,000	0.19		63	10.8	0.13	0.7
	10	1,800	0.34		113	10.8	0.24	0.7									15	800	0.15		57	9.5	0.12	0.8
	4	1,700	0.32		165	7.0	0.35	1.1									3	4,300	0.81		94	31.0	0.16	0.2
	14	4,500	0.85		471	6.5	1.02	1.2									28	900	0.17		20	31.0	0.03	0.2
	4	300	0.06		31	7.0	0.07	1.1									3	1,900	0.36		42	31.0	0.07	0.2
	14	1,900	0.36		199	6.5	0.43	1.2									21	600	0.11		37	10.8	0.08	0.7
	4	1,000	0.19		98	7.0	0.21	1.1									22	1,700	0.32		121	9.5	0.26	0.8
	14	2,000	0.38		210	6.5	0.46	1.2									21	600	0.11		37	10.8	0.08	0.7
	3	3,700	0.70		81	31.0	0.14	0.2									22	600	0.11		42	9.5	0.09	0.8
	4	2,000	0.38	1200	1395	7.0	1.42	1.1									21	600	0.11		37	10.8	0.08	0.7
	3	1,400	0.26		30	31.0	0.05	0.2									22	2,200	0.42		159	9.5	0.34	0.8
	4	2,200	0.42		216	7.0	0.46	1.1									3	3,400	0.64		74	31.0	0.13	0.2
	5	100	0.02		3	20.7	0.01	0.3									21	1,100	0.21		70	10.8	0.15	0.7
	3	6,200	1.17		136	31.0	0.23	0.2									3	300	0.06		7	31.0	0.01	0.2
	4	3,000	0.57		293	7.0	0.63	1.1									21	1,400	0.26		87	10.8	0.18	0.7
	3	400	0.08		9	31.0	0.02	0.2									3	8,500	1.51		187	31.0	0.32	0.2
	2	1,000	0.19		63	10.8	0.13	0.7									10	1,300	0.25		83	10.8	0.18	0.7
																	15	5,000	0.94		356	9.5	0.75	0.8
																	3	600	0.11		13	31.0	0.02	0.2
																	10	300	0.06		20	10.8	0.04	0.7
																	3	2,600	0.49		57	31.0	0.10	0.2
																	10	300	0.06		20	10.8	0.04	0.7
																	3	7,900	1.49	17	190	31.0	0.30	0.2
																	15	400	0.08		30	9.5	0.06	0.8
																	3	2,500	0.47		55	31.0	0.09	0.2
																	94	500	0.09		40	8.2	0.08	0.9
																	69	1,200	0.23		77	10.8	0.16	0.7
																	13	2,900	0.55		9,900	0.2	3.30	6.0

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 40 RCI) Terrain Type	Distance feet	Distance mile	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 35 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
																	10	400	0.08		27	10.8	0.06	0.7
																	3	800	0.15		17	31.0	0.03	0.2
																	15	1,900	0.36		136	9.5	0.29	0.8
																	1	1,700	0.32		172	6.7	0.35	1.1
																	14	4,500	0.85		471	6.5	1.02	1.2
																	1	300	0.06		32	6.7	0.07	1.1
																	14	1,900	0.36		199	6.5	0.43	1.2
																	4	1,000	0.19		98	7.0	0.21	1.1
																	14	1,700	0.32		177	6.5	0.38	1.2
																	1	300	0.06		32	6.7	0.07	1.1
																	3	2,800	0.53		62	31.0	0.10	0.2
																	1	600	0.11		59	6.7	0.12	1.1
																	4	200	0.04		21	7.0	0.04	1.1
																	3	300	0.06		7	31.0	0.01	0.2
																	1	1,800	0.34	1200	1383	6.7	1.37	1.1
																	3	1,400	0.26		30	31.0	0.05	0.2
																	1	2,200	0.42		226	6.7	0.46	1.1
																	5	100	0.02		3	20.7	0.01	0.3
																	3	6,900	1.30		151	31.0	0.26	0.2
																	4	600	0.11		57	7.0	0.12	1.1
																	1	1,500	0.28		150	6.7	0.31	1.1
																	3	600	0.11		13	31.0	0.02	0.2
																	2	1,000	0.19		63	10.8	0.13	0.7
Total		246,900	46.66		53590		38.63											252,500	47.74		61,527		43.85	
M561	2	1,600	0.30		82	13.2	0.15	0.5									2	1,600	0.30		82	13.2	0.15	0.5
	3	2,100	0.40		36	40.0	0.08	0.2									3	1,500	0.28		25	40.0	0.06	0.2
	6	3,300	0.62		155	14.4	0.31	0.5									6	2,500	0.47		118	14.4	0.24	0.5
	10	900	0.17		64	9.6	0.14	0.8									15	1,400	0.26		102	9.2	0.21	0.8
	3	1,600	0.30		27	40.0	0.06	0.2									10	400	0.08		30	9.6	0.06	0.8
	10	300	0.06		22	9.6	0.05	0.8									3	1,600	0.30		27	40.0	0.06	0.2
	6	1,000	0.19		47	14.4	0.10	0.5									10	300	0.06		22	9.6	0.05	0.8
	3	3,200	0.60		54	40.0	0.12	0.2									[illegible]	1,400	0.26		65	14.4	0.13	0.5
	6	1,200	0.23		57	14.4	0.12	0.5									[illegible]	1,000	0.19		74	9.2	0.15	0.8
	10	600	0.11		41	9.6	0.09	0.8									[illegible]	1,200	0.23		21	40.0	0.05	0.2
	3	1,900	0.36		32	40.0	0.07	0.2									[illegible]	1,300	0.25		98	9.2	0.20	0.8
	10	1,200	0.23	17	103	9.6	0.18	0.8									[illegible]	1,900	0.36		90	14.4	0.18	0.5
	6	3,300	0.62		155	14.4	0.31	0.5									[illegible]	1,300	0.25		98	9.2	0.20	0.8
	10	2,500	0.47		176	9.6	0.38	0.8									[illegible]	4,100	0.77	17	209	14.4	0.38	0.5
	6	1,700	0.32		80	14.4	0.16	0.5									[illegible]	1,000	0.19		74	9.2	0.15	0.8
	10	700	0.13		49	9.6	0.10	0.8									[illegible]	1,700	0.32		120	9.6	0.26	0.8
	6	2,800	0.53		132	14.4	0.26	0.5									[illegible]	1,300	0.25		62	14.4	0.12	0.5
	3	1,800	0.34		31	40.0	0.07	0.2									[illegible]	900	0.17		7	9.2	0.14	0.8
	2	800	0.15		41	13.2	0.08	0.5									[illegible]	500	0.09		22	14.4	0.04	0.5
	10	1,000	0.19	1200	1,271	9.6	1.45	0.8									[illegible]	300	0.06		23	9.2	0.05	0.8
	3	1,200	0.23	1200	1,221	40.0	1.35	0.2									[illegible]	1,500	0.28		70	14.4	0.14	0.5
	10	3,400	0.64		240	9.6	0.51	0.8									[illegible]	2,100	0.40		36	40.0	0.08	0.2
	3	1,000	0.19		17	40.0	0.04	0.2									[illegible]	1,400	0.26		102	9.2	0.16	0.8
	10	1,000	0.19		71	9.6	0.15	0.8									[illegible]	1,500	0.28	1200	1,225	40.0	1.36	0.2
	49	500	0.09		20	16.3	0.04	0.4									[illegible]	3,200	0.60	1200	1,435	9.2	1.78	0.8

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI): Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 40 RCI): Terrain Types	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 35 RCI): Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	6	4,300	0.81		202	14.4	0.40	0.5									3	1,700	0.32		29	40.0	0.06	0.2
	89	600	0.11		49	8.1	0.10	0.9									15	900	0.17		67	9.2	0.14	0.8
	6	1,100	0.21		52	14.4	0.10	0.5									49	600	0.11		24	16.3	0.04	0.4
	32	800	0.15	17	5,417	0.1	1.16	7.7									6	4,300	0.81		202	14.4	0.40	0.5
	3	2,300	0.43		39	40.0	0.09	0.2									89	600	0.11		49	8.1	0.10	0.9
	37	600	0.11		10	40.0	0.02	0.2									6	1,000	0.19		48	14.4	0.10	0.5
	40	300	0.06		25	8.8	0.05	0.8									30	500	0.09		3,240	0.1	0.69	7.7
	11	1,900	0.36		147	8.8	0.29	0.8									3	2,000	0.38	17	51	40.0	0.08	0.2
	32	200	0.04		1,440	0.1	0.31	7.7									37	700	0.13		8	40.0	0.03	0.2
	87	1,500	0.28		124	8.1	0.25	0.9									40	400	0.08		33	8.8	0.06	0.8
	14	5,400	1.02		496	7.4	1.02	1.0									11	1,900	0.36		147	8.8	0.29	0.8
	52	1,000	0.19		92	7.4	0.19	1.0									32	300	0.06		2,160	0.1	0.46	7.7
	14	400	0.08		39	7.4	0.08	1.0									87	800	0.15		67	8.1	0.14	0.9
	10	400	0.08		30	9.6	0.06	0.8									14	3,700	0.70		341	7.4	0.70	1.0
	3	1,200	0.23		21	40.0	0.05	0.2									10	1,200	0.23		96	9.6	0.18	0.8
	10	900	0.17		64	9.6	0.14	0.8									14	300	0.06		29	7.4	0.06	1.0
	3	3,200	0.60		54	40.0	0.12	0.2									15	500	0.09		35	9.2	0.07	0.8
	10	1,600	0.30	17	130	9.6	0.24	0.8									82	1,900	0.36		175	7.4	0.36	1.0
	25	1,300	0.25		25	36.5	0.05	0.2									14	300	0.06		29	7.4	0.06	1.0
	3	900	0.17		15	40.0	0.03	0.2									15	700	0.13		51	9.2	0.10	0.8
	57	7,600	1.44		259	20.0	0.58	0.4									3	900	0.17		15	40.0	0.03	0.2
	32	300	0.06		2,160	0.1	0.46	7.7									15	2,800	0.53		207	9.2	0.42	0.8
	2	900	0.17		46	13.2	0.08	0.5									10	800	0.15		56	9.6	0.12	0.8
	16	600	0.11		27	14.7	0.06	0.5									15	800	0.15		59	9.2	0.12	0.8
	30	200	0.04		1,440	0.1	0.31	7.7									23	2,000	0.38		37	36.5	0.09	0.2
	3	800	0.15		14	40.0	0.03	0.2									16	800	0.15		58	9.3	0.12	0.8
	2	600	0.11		30	13.2	0.06	0.5									57	7,000	1.32		238	20.0	0.53	0.4
	3	900	0.17		15	40.0	0.03	0.2									30	300	0.06		2,160	0.1	0.46	7.7
	32	1,800	0.34	1200	13,440	0.1	3.92	7.7									2	800	0.15		41	13.2	0.08	0.5
	3	600	0.11		10	40.0	0.02	0.2									16	500	0.09		35	9.3	0.07	0.8
	2	700	0.13		35	13.2	0.06	0.5									30	200	0.04		1,440	0.1	0.31	7.7
	3	1,900	0.36		32	40.0	0.07	0.2									3	600	0.11		10	40.0	0.02	0.2
	5	4,400	0.83		83	36.2	0.17	0.2									2	1,100	0.21		57	13.2	0.10	0.5
	73	1,100	0.21		65	11.6	0.13	0.6									3	400	0.08		7	40.0	0.02	0.2
	3	7,000	1.32		119	40.0	0.26	0.2									30	1,800	0.34	1200	13,440	0.1	3.92	7.7
	10	1,400	0.26		97	9.6	0.21	0.8									3	400	0.08		7	40.0	0.02	0.2
	15	800	0.15		58	9.3	0.12	0.8									2	1,500	0.28		76	13.2	0.14	0.5
	10	2,600	0.49		184	9.6	0.39	0.8									3	1,100	0.21		19	40.0	0.04	0.2
	15	3,600	0.68		263	9.3	0.54	0.8									5	4,300	0.81		81	36.2	0.16	0.2
	10	1,100	0.21		79	9.6	0.17	0.8									73A	800	0.15		50	10.9	0.10	0.7
	57	1,200	0.23		41	20.0	0.09	0.4									3	7,000	1.32		119	40.0	0.26	0.2
	3	2,900	0.55		50	40.0	0.11	0.2									15	1,300	0.25		98	9.2	0.20	0.8
	10	400	0.08		30	9.6	0.06	0.8									3	400	0.08		7	40.0	0.02	0.2
	81	5,600	1.06		265	14.4	0.53	0.5									15	300	0.06		23	9.2	0.05	0.8
	10	2,500	0.47		176	9.6	0.38	0.8									10	700	0.13		49	9.6	0.10	0.8
	6	700	0.13		32	14.4	0.06	0.5									15	1,400	0.26		102	9.2	0.21	0.8
	62	5,900	1.12		247	16.3	0.45	0.4									10	400	0.08		30	9.6	0.06	0.8
	10	800	0.15		56	9.6	0.12	0.8									15	3,400	0.64		250	9.2	0.51	0.8
	63	400	0.08		20	14.4	0.04	0.5									10	600	0.11		41	9.6	0.09	0.8
	62	900	0.17		38	16.3	0.07	0.4									57	1,700	0.32		58	20.0	0.13	0.4

(Continued)

Table 4 (Continued)

	Dry Season (60 or 40 RCI)								Wet Season (60 or 40 RCI)								Wet Season (5? or 35 RCI)							
Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	63	900	0.17		42	14.4	0.08	0.5									15	400	0.08		31	9.2	0.06	0.8
	62	1,200	0.23		51	16.3	0.09	0.4									3	2,500	0.47		42	40.0	0.09	0.2
	63	4,200	0.79		197	14.4	0.40	0.5									6	400	0.08		31	14.2	0.04	0.5
	31	8,200	1.55		140	40.0	0.31	0.2									81	1,200	0.23		58	14.4	0.12	0.5
	10	1,800	0.34		127	9.6	0.27	0.8									69	500	0.09		34	9.6	0.07	0.8
	3	1,400	0.26		23	40.0	0.05	0.2									94	1,000	0.19		74	9.3	0.15	0.8
	16	500	0.09		22	14.7	0.04	0.5									17	1,800	0.34		31	40.0	0.07	0.2
	15	1,800	0.34		132	9.3	0.27	0.8									94	300	0.06		23	9.3	0.05	0.8
	10	2,000	0.38		142	9.6	0.30	0.8									69	400	0.08		30	9.6	0.06	0.8
	15	2,800	0.53		205	9.3	0.42	0.8									94	400	0.08		31	9.3	0.06	0.8
	3	900	0.17		15	40.0	0.03	0.2									69	400	0.08		30	9.6	0.06	0.8
	15	1,600	0.30		116	9.3	0.24	0.8									70	800	0.15		41	13.2	0.08	0.5
	10	1,100	0.21		79	9.6	0.17	0.8									69	300	0.06		22	9.6	0.05	0.8
	3	4,100	0.77		69	40.0	0.15	0.2									10	800	0.15		56	9.6	0.12	0.8
	10	1,200	0.23		86	9.6	0.18	0.8									6	600	0.11		28	14.4	0.06	0.5
	3	4,900	0.93		84	40.0	0.19	0.2									62	6,500	1.23		272	16.3	0.49	0.4
	21	700	0.13		49	9.6	0.10	0.8									6	300	0.06		15	14.4	0.03	0.5
	22	2,800	0.53		205	9.3	0.42	0.8									15	800	0.15		59	9.2	0.12	0.8
	21	600	0.11		41	9.6	0.09	0.8									63	400	0.08		20	14.4	0.04	0.5
	22	2,400	0.45		174	9.3	0.36	0.8									62	1,900	0.36		80	16.3	0.14	0.4
	3	12,000	2.27	17	221	40.0	0.45	0.2									63	3,700	0.70		175	14.4	0.35	0.5
	10	1,400	0.26		97	9.6	0.21	0.8									31	4,100	0.77		69	40.0	0.15	0.2
	15	5,000	0.94		364	9.3	0.75	0.8									80	900	0.17		66	9.3	0.14	0.8
	3	600	0.11		10	40.0	0.02	0.2									31	4,000	0.76		68	40.0	0.15	0.2
	10	300	0.06		22	9.6	0.05	0.8									15	1,000	0.19		74	9.2	0.15	0.8
	3	1,900	0.36		32	40.0	0.07	0.2									10	700	0.13		49	9.6	0.10	0.8
	10	300	0.06		22	9.6	0.05	0.8									3	1,500	0.28		25	40.0	0.06	0.2
	15	300	0.06		23	9.3	0.05	0.8									16	500	0.09		35	9.3	0.07	0.8
	10	200	0.04		15	9.6	0.03	0.8									15	1,700	0.32		125	9.2	0.26	0.8
	3	8,500	1.61	17	162	40.0	0.32	0.2									10	1,900	0.36		135	9.6	0.29	0.8
	69	1,500	0.28		105	9.6	0.22	0.8									15	5,200	0.98		383	9.2	0.78	0.8
	13	2,900	0.55		762	2.6	1.65	3.0									3	5,200	0.98		88	40.0	0.20	0.2
	10	600	0.11		41	9.6	0.09	0.8									15	400	0.08		31	9.2	0.06	0.8
	3	700	0.13		12	40.0	0.03	0.2									10	400	0.08		30	9.6	0.06	0.8
	10	1,900	0.36		135	9.6	0.29	0.8									15	300	0.06		23	9.2	0.05	0.8
	4	1,800	0.34		219	5.6	0.44	1.3									3	2,100	0.40		36	40.0	0.08	0.2
	14	6,200	1.17		569	7.4	1.17	1.0									28	900	0.17		15	40.0	0.03	0.2
	4	500	0.09		58	5.6	0.12	1.3									3	1,900	0.36		32	40.0	0.07	0.2
	14	1,600	0.30		146	7.4	0.30	1.0									21	400	0.08		30	9.6	0.06	0.8
	4	300	0.06		39	5.6	0.08	1.3									22	1,700	0.32		125	9.2	0.26	0.8
	14	1,200	0.23		112	7.4	0.23	1.0									21	700	0.13		49	9.6	0.10	0.8
	3	4,100	0.77		69	40.0	0.15	0.2									22	600	0.11		43	9.2	0.09	0.8
	4	1,200	0.23	1200	1,348	5.6	1.60	1.3									21	600	0.11		41	9.6	0.09	0.8
	3	1,400	0.26		23	40.0	0.05	0.2									22	2,400	0.45		176	9.2	0.36	0.8
	4	2,500	0.47		302	5.6	0.61	1.3									3	2,100	0.40	1200	1,236	40.0	1.38	0.2
	5	400	0.08		8	36.2	0.02	0.2									21	800	0.15		56	9.6	0.12	0.8
	3	5,700	1.08		97	40.0	0.22	0.2									3	5,600	1.06		95	40.0	0.21	0.2
	4	3,000	0.57		366	5.6	0.74	1.3									10	800	0.15		56	9.6	0.12	0.8
	3	500	0.09		6	40.0	0.02	0.2									3	400	0.08		7	40.0	0.02	0.2
	2	1,000	0.19		52	13.2	0.10	0.5									10	300	0.06		22	9.6	0.05	0.8

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI)								Wet Season (60 or 40 RCI)								Wet Season 60 or 35 RCI							
	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
																	3	1,600	0.30		27	40.0	0.06	0.2
																	10	1,200	0.22		86	9.6	0.18	0.8
																	15	5,000	0.94		368	9.2	0.75	0.8
																	3	500	0.09		8	40.0	0.02	0.2
																	10	400	0.08		30	9.6	0.06	0.8
																	3	2,400	0.45		40	40.0	0.09	0.2
																	10	400	0.08		30	9.6	0.06	0.8
																	3	6,800	1.29	17	133	40.0	0.26	0.2
																	16	500	0.09		35	9.3	0.07	0.8
																	3	3,400	0.64		58	40.0	0.13	0.2
																	94	600	0.11		43	9.2	0.09	0.8
																	69	800	0.15		56	9.6	0.12	0.8
																	13	2,900	0.55		762	2.6	1.65	3.0
																	10	400	0.08		30	9.6	0.06	0.8
																	3	800	0.15		14	40.0	0.03	0.2
																	15	1,900	0.36		141	9.2	0.29	0.8
																	1	1,700	0.32		206	5.6	0.42	1.3
																	14	9,600	1.81		881	7.4	1.81	1.0
																	3	2,700	0.51		46	40.0	0.10	0.2
																	16	600	0.11		43	9.3	0.09	0.8
																	3	300	0.06		5	40.0	0.01	0.2
																	1	2,000	0.38	1200	1,444	5.6	1.79	1.3
																	3	1,400	0.26		23	40.0	0.05	0.2
																	1	2,300	0.43		276	5.6	0.56	1.3
																	5	100	0.02		2	36.2	0.00	0.2
																	3	6,900	1.30		117	40.0	0.26	0.2
																	4	500	0.09		58	5.6	0.12	1.3
																	1	1,500	0.28		180	5.6	0.36	1.3
																	3	600	0.11		10	40.0	0.02	0.2
																	2	300	0.06		16	13.2	0.03	0.5
Total		245,200	46.33		39,507		34.99											242,000	45.69		39,609		31.42	
M706	2	1,600	0.30		82	13.2	0.27	0.9									2	300	0.06		16	13.2	0.05	0.9
	3	1,700	0.32		30	38.3	0.10	0.3									3	2,900	0.55		52	38.3	0.16	0.3
	6	2,800	0.53		121	15.8	0.42	0.8									6	2,800	0.53		121	15.8	0.42	0.8
	10	1,400	0.26		90	10.4	0.31	1.2									15	800	0.15		59	9.2	0.20	1.3
	3	1,000	0.19		18	38.3	0.06	0.3									10	1,000	0.19		66	10.4	0.23	1.2
	10	1,500	0.28		97	10.4	0.34	1.2									3	1,200	0.23		22	38.3	0.07	0.3
	6	1,000	0.19		43	15.8	0.15	0.8									10	300	0.06		21	10.4	0.07	1.2
	10	3,300	0.62		215	10.4	0.74	1.2									6	1,400	0.26		59	15.8	0.21	0.8
	6	2,100	0.40		91	15.8	0.32	0.8									15	900	0.17		66	9.2	0.22	1.3
	10	1,300	0.25	1200	1,287	10.4	2.30	1.2									3	1,300	0.25		23	38.3	0.08	0.3
	6	500	0.09		20	15.8	0.07	0.8									15	1,200	0.23		90	9.2	0.30	1.3
	10	800	0.15		52	10.4	0.18	1.2									6	2,000	0.38		87	15.8	0.30	0.8
	6	2,500	0.47		107	15.8	0.38	0.8									15	1,200	0.23	1200	1,290	9.2	2.30	1.3
	10	3,000	0.57		197	10.4	0.68	1.2									6	4,100	0.77		175	15.8	0.62	0.8
	6	800	0.15		34	15.8	0.12	0.8									15	1,000	0.19		74	9.2	0.25	1.3
	10	1,300	0.25		87	10.4	0.30	1.2									10	1,900	0.36		125	10.4	0.43	1.2
	6	1,100	0.21		48	15.8	0.17	0.8									6	1,200	0.23		52	15.8	0.18	0.8
	10	1,300	0.25		87	10.4	0.30	1.2									15	800	0.15		59	9.2	0.20	1.3
	3	1,400	0.26		24	38.3	0.08	0.3									6	600	0.11		25	15.8	0.09	0.8
	2	1,100	0.21		57	13.2	0.19	0.9									15	200	0.04		16	9.2	0.05	1.3

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 35 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	10	7,400	1.40	2400	2,885	10.4	5.68	1.2									6	1,500	0.28		64	15.8	0.22	0.8
	49	1,000	0.19		37	18.6	0.13	0.7									3	2,300	0.43		40	38.3	0.13	0.3
	6	700	0.13		30	15.8	0.10	0.8									15	1,400	0.26	1200	1,302	9.2	2.34	1.3
	28	1,400	0.26		31	30.4	0.10	0.4									3	1,400	0.26	1200	1,224	38.3	2.08	0.3
	6	2,300	0.43		98	15.8	0.34	0.8									15	4,000	0.76		297	9.2	0.99	1.3
	89	600	0.11		42	9.4	0.14	1.3									10	400	0.08		28	10.4	0.10	1.2
	6	1,000	0.19		43	15.8	0.15	0.8									15	700	0.13		51	9.2	0.17	1.3
	32	500	0.09		3,253	0.1	1.10	12.3									10	200	0.04		14	10.4	0.05	1.2
	3	2,300	0.43		40	38.3	0.13	0.3									49	1,000	0.19		37	18.6	0.13	0.7
	37	700	0.13		12	38.3	0.04	0.3									6	700	0.13		30	15.8	0.10	0.8
	40	300	0.06		18	12.0	0.06	1.0									28	1,400	0.26		31	30.4	0.10	0.4
	11	2,000	0.38		124	11.0	4.67	12.3									6	2,300	0.43		98	15.8	0.34	0.8
	32	300	0.06		2,160	0.1	0.74	12.3									89	700	0.13		50	9.4	0.17	1.3
	87	1,400	0.26		100	9.4	0.34	1.3									6	700	0.13		30	15.8	0.10	0.8
	14	4,200	0.79		323	8.8	1.11	1.4									30	1,000	0.19	17	6,857	0.1	2.34	12.3
	82	2,300	0.43		166	9.3	0.56	1.3									3	2,200	0.42		39	38.3	0.13	0.3
	14	400	0.08		33	8.8	0.11	1.4									37	800	0.15		14	38.3	0.04	0.3
	10	300	0.06		21	10.4	0.07	1.2									40	500	0.09		27	12.0	0.09	1.0
	3	1,100	0.21		20	38.3	0.06	0.3									11	1,900	0.36		118	11.0	0.40	1.1
	10	800	0.15		52	10.4	0.18	1.2									32	300	0.06		2,160	0.1	0.74	12.3
	3	1,000	0.19		18	38.3	0.06	0.3									87	1,500	0.28		107	9.4	0.36	1.3
	10	3,900	0.74		256	10.4	0.89	1.2									14	5,500	1.04		425	8.8	1.46	1.4
	23	2,100	0.40		43	33.7	0.16	0.4									82	600	0.11		43	9.3	0.14	1.3
	3	800	0.15		14	38.3	0.04	0.3									14	300	0.06		25	8.8	0.08	1.4
	57	7,800	1.47		248	21.3	0.88	0.6									3	1,600	0.30		28	38.3	0.09	0.3
	32	400	0.08		2,880	0.1	0.98	12.3									15	700	0.13		51	9.2	0.17	1.3
	2	800	0.15		41	13.2	0.14	0.9									3	1,200	0.23		22	38.3	0.07	0.3
	16	600	0.11		38	10.5	0.13	1.2									15	2,500	0.47		184	9.2	0.61	1.3
	30	300	0.06		2,160	0.1	0.74	12.3									10	800	0.15		52	10.4	0.18	1.2
	3	600	0.11		10	38.3	0.03	0.3									15	900	0.17		66	9.2	0.22	1.3
	2	1,100	0.21		57	13.2	0.19	0.9									23	1,800	0.34		36	33.7	0.14	0.4
	3	400	0.08		7	38.3	0.02	0.3									16	800	0.15		61	8.8	0.21	1.4
	32	1,900	0.36	1200	14,160	0.1	6.43	12.3									57	7,000	1.32		223	21.3	0.79	0.6
	3	500	0.09		8	38.3	0.03	0.3									30	400	0.08		2,880	0.1	0.98	12.3
	2	700	0.13		35	13.2	0.12	0.9									2	900	0.17		46	13.2	0.15	0.9
	3	1,900	0.36		34	38.3	0.11	0.3									16	500	0.09		37	8.8	0.13	1.4
	5	3,400	0.64		70	33.0	0.26	0.4									30	200	0.04		1,440	0.1	0.49	12.3
	3	1,800	0.34		32	38.3	0.10	0.3									3	700	0.13		12	38.3	0.08	0.3
	73	300	0.06		18	12.2	0.06	1.0									2	1,100	0.21		57	13.2	0.19	0.9
	22	1,000	0.19		71	9.6	0.25	1.3									3	500	0.09		8	38.3	0.03	0.3
	16	1,500	0.28		96	10.5	0.34	1.2									30	1,800	0.34	1200	13,440	0.1	5.18	12.3
	3	3,700	0.70		66	38.3	0.21	0.3									3	500	0.09		8	38.3	0.03	0.3
	10	1,200	0.23		80	10.4	0.28	1.2									2	700	0.13		35	13.2	0.12	0.9
	3	300	0.06		6	38.3	0.02	0.3									3	1,900	0.36		34	38.3	0.11	0.3
	15	400	0.08		30	9.6	0.10	1.3									5	3,200	0.60		65	33.0	0.24	0.4
	10	2,800	0.53		183	10.4	0.64	1.2									3	1,600	0.30		28	38.3	0.09	0.3
	15	3,600	0.68		255	9.6	0.88	1.3									73A	400	0.08		28	10.3	0.10	1.2
	10	1,100	0.21		73	10.4	0.25	1.2									22	1,200	0.23		90	9.2	0.30	1.3
	57	1,300	0.25		42	21.3	0.15	0.6									16	1,700	0.32		131	8.8	0.45	1.4
	3	2,800	0.53		50	38.3	0.16	0.3									3	3,200	0.60		56	38.3	0.18	0.3
	10	400	0.08		28	10.4	0.10	1.2									15	1,100	0.21		82	9.2	0.27	1.3
	81	3,100	0.59		134	15.8	0.47	0.8									3	300	0.06		6	38.3	0.02	0.3
	25	2,600	0.49		112	15.8	0.39	0.8									15	400	0.08		31	9.2	0.10	1.3
	10	2,300	0.43		149	10.4	0.52	1.2									10	600	0.11		38	10.4	0.13	1.2
	6	500	0.09		20	15.8	0.07	0.8									15	1,400	0.26		102	9.2	0.34	1.3

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (50 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	62	6,500	1.23		238	18.6	0.86	0.7								
	6	300	0.06		14	15.8	0.05	0.8								
	10	700	0.13		45	10.4	0.16	1.2								
	63	500	0.09		20	15.8	0.07	0.8								
	62	2.300	0.43		83	18.6	0.30	0.7								
	63	3,500	0.66		150	15.8	0.53	0.8								
	31	4,000	0.76		71	38.3	0.23	0.3								
	55	1,000	0.19		66	10.4	0.23	1.2								
	31	4,100	0.77		72	38.3	0.23	0.3								
	10	1,800	0.34		118	10.4	0.41	1.2								
	3	800	0.15		14	38.3	0.04	0.3								
	16	500	0.09		31	10.5	0.11	1.2								
	15	2,300	0.43		161	9.6	0.56	1.3								
	10	1,900	0.36		125	10.4	0.43	1.2								
	15	2,300	0.43		161	9.6	0.56	1.3								
	3	800	0.15		14	38.3	0.04	0.3								
	15	1,700	0.32		120	9.6	0.42	1.3								
	10	900	0.17		59	10.4	0.20	1.2								
	3	4,500	0.85		80	38.3	0.26	0.3								
	10	1,200	0.23		80	10.4	0.28	1.2								
	3	5,000	0.94		88	38.3	0.28	0.3								
	21	300	0.06		21	10.4	0.07	1.2								
	22	1,700	0.32		120	9.6	0.42	1.3								
	21	700	0.13		45	10.4	0.16	1.2								
	22	600	0.11		41	9.6	0.14	1.3								
	21	600	0.11		38	10.4	0.13	1.2								
	22	2,400	0.45		169	9.6	0.58	1.3								
	3	2,000	0.38	1200	1,236	38.3	2.11	0.3								
	21	900	0.17		59	10.4	0.20	1.2								
	3	9,000	1.70		160	38.3	0.51	0.3								
	10	1,100	0.21		73	10.4	0.25	1.2								
	15	5,000	0.94		352	9.6	1.22	1.3								
	3	500	0.09		8	38.3	0.03	0.3								
	10	400	0.08		28	10.4	0.10	1.2								
	3	2,500	0.47		44	38.3	0.14	0.3								
	10	200	0.04		14	10.4	0.05	1.2								
	3	11,000	2.09		213	38.3	0.63	0.3								
	69	1,200	0.23		80	10.4	0.28	1.2								
	13	2,900	0.55		943	2.1	3.19	5.8								
	10	600	0.11		38	10.4	0.13	1.2								
	3	700	0.13		12	38.3	0.04	0.3								
	10	1,900	0.36		125	10.4	0.43	1.2								
	4	1,800	0.34		191	6.4	0.65	1.9								
	14	9,600	1.81		740	8.8	2.53	1.4								
	3	2,900	0.55		52	38.3	0.16	0.3								
	4	2,100	0.40		225	6.4	0.76	1.9								
	3	1,400	0.26		24	38.3	0.08	0.3								
	4	2,300	0.43	1200	1,442	6.4	2.82	1.9								
	5	300	0.06		7	33.0	0.02	0.4								
	3	6,800	1.29		121	38.3	0.39	0.3								
	4	2,100	0.40		225	6.4	0.76	1.9								
	3	500	0.09		8	38.3	0.03	0.3								
	2	1,100	0.21		57	13.2	0.19	0.9								

Vehicle	Wet Season (60 or 35 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	10	500	0.09		31	10.4	0.11	1.2
	15	3,600	0.68		266	9.2	0.88	1.3
	10	600	0.11		38	10.4	0.13	1.2
	57	700	0.13		22	21.3	0.08	0.6
	2	400	0.08		22	13.2	0.07	0.9
	57	600	0.11		19	21.3	0.07	0.6
	15	100	0.02		8	9.2	0.03	1.3
	16	200	0.04		16	8.8	0.06	1.4
	3	2,800	0.53		50	38.3	0.16	0.3
	94	400	0.08		27	10.5	0.10	1.2
	81	1,400	0.26		59	15.8	0.21	0.8
	69	300	0.06		21	10.4	0.07	1.2
	94	800	0.15		51	10.5	0.18	1.2
	17	500	0.09		10	31.0	0.07	0.8
	25	3,800	0.72		164	15.8	0.58	0.8
	10	1,100	0.21		73	10.4	0.25	1.2
	6	600	0.11		25	15.8	0.09	0.8
	62	6,600	1.25		242	18.6	0.88	0.7
	6	300	0.06		14	15.8	0.05	0.8
	15	800	0.15		59	9.2	0.20	1.3
	63	400	0.08		18	15.8	0.06	0.8
	62	1,900	0.36		70	18.6	0.25	0.7
	63	3,700	0.70		159	15.8	[illegible]	0.8
	31	4,300	0.81		76	38.3	0.24	[illegible]
	80	800	0.15		61	8.8	0.21	1.4
	31	4,100	0.77		72	38.3	0.23	0.3
	15	900	0.17		66	9.2	0.22	1.3
	10	900	0.17		59	10.4	0.20	1.2
	3	1,700	0.32		30	38.3	0.10	0.3
	16	300	0.06		25	8.8	0.08	1.4
	15	1,600	0.30		117	9.2	0.39	1.3
	10	1,900	0.36		125	10.4	0.43	1.2
	15	2,800	0.53		207	9.2	0.69	1.3
	3	800	0.15		14	38.3	0.04	0.3
	15	1,800	0.34		133	9.2	0.44	1.3
	3	5,200	0.98		92	38.3	0.29	0.3
	15	400	0.08		31	9.2	0.10	1.3
	10	500	0.09		31	10.4	0.11	1.2
	15	300	0.06		23	9.2	0.08	1.3
	3	2,100	0.40		38	38.3	0.12	0.3
	28	900	0.17		20	30.4	0.7	0.4
	3	1,900	0.36		34	38.3	0.11	0.3
	21	400	0.08		28	10.4	0.10	1.2
	22	1,700	0.32		125	9.2	0.42	1.3
	21	700	0.13		45	10.4	0.16	1.2
	22	600	0.11		43	9.2	0.14	1.3
	21	700	0.13		45	10.4	0.16	1.2
	22	2,300	0.43		168	9.2	0.56	1.3
	3	2,100	0.40	1200	1,238	38.3	2.12	0.3
	21	700	0.13		45	10.4	0.16	1.2
	3	9,000	1.70		160	38.3	0.51	0.3
	[illegible]	1,200	0.23		80	10.4	0.28	1.2
	15	5,000	0.94		368	[illegible]	1.22	1.3
	3	600	0.11		10	38.3	0.03	0.3
	10	300	0.06		21	10.4	0.07	1.2

(Continued)

Table 4 (Continued)

Dry Season (60 or 40 RCI)

Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
Total		245,100	46.29		42,520		64.95	
M548	2	1,100	0.21		80	9.4	0.38	1.8
	10	2,200	0.42		150	10.0	0.63	1.5
	52	600	0.11		41	10.0	0.16	1.5
	10	2,000	0.38		136	10.0	0.57	1.5
	3	1,100	0.21		75	10.0	0.32	1.5
	10	1,600	0.30		109	10.0	0.45	1.5
	10	900	0.17		61	10.0	0.26	1.5
	6	300	0.06		24	8.4	0.14	2.4
	10	6,500	1.23	17	460	10.0	1.84	1.5
	6	500	0.09		41	8.4	0.22	2.4
	10	1,000	0.19		68	10.0	0.28	1.5
	10	2,200	0.42		150	10.0	0.63	1.5
	6	700	0.13		57	8.4	0.31	2.4
	10	3,800	0.72		259	10.0	1.08	1.5
	10	1,700	0.32		116	10.0	0.48	1.5
	6	200	0.04		16	8.4	0.10	2.4
	10	1,300	0.24		89	10.0	0.36	1.5
	10	2,200	0.42		150	10.0	0.63	1.5
	3	700	0.13		48	10.0	0.20	1.5
	2	1,700	0.32		123	9.4	0.58	1.8
	3	200	0.04		14	10.0	0.06	1.5
	10	6,500	1.23	2,400	2,843	10.0	6.40	1.5
	10	700	0.13		48	10.0	0.20	1.5

Wet Season (60 or 40 RCI)

Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
M548	2	1,600	0.30		116	9.4	0.54	1.8
	10	2,200	0.42		150	10.0	0.63	1.5
	52	600	0.11		41	10.0	0.16	1.5
	10	1,400	0.26		95	10.0	0.39	1.5
	3	300	0.06		20	10.0	0.09	1.5
	10	200	0.04		14	10.0	0.06	1.5
	3	1,100	0.21		75	10.0	0.32	1.5
	10	1,200	0.23		82	10.0	0.34	1.5
	15	500	0.09		37	9.2	0.17	1.9
	10	600	0.11		41	10.0	0.16	1.5
	6	600	0.11		49	8.4	0.26	2.4
	15	2,500	0.47		135	9.2	0.89	1.9
	10	1,900	0.36		130	10.0	0.54	1.5
	6	700	0.13		57	8.4	0.31	2.4
	15	1,500	0.28	17	128	9.2	0.53	1.9
	6	400	0.08		32	8.4	0.19	2.4
	15	1,200	0.23		89	9.2	0.44	1.9
	10	1,700	0.32		116	10.0	0.48	1.5
	14	600	0.11		60	6.8	0.36	3.3
	15	800	0.15		59	9.2	0.28	1.9
	10	4,600	0.87		314	10.0	1.30	1.5

Wet Season (60 or 35 RCI)

Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	3	2,500	0.47		44	38.2	0.14	0.3
	10	300	0.06		21	10.4	0.07	1.2
	3	7,600	1.44	17	152	38.3	0.43	0.3
	15	700	0.13		51	9.2	0.17	1.3
	3	1,900	0.36		34	38.3	0.11	0.3
	94	700	0.13		45	10.5	[illegible]	1.2
	69	700	0.13		45	10.4	0.16	1.2
	13	3,000	0.57		977	2.1	3.31	5.8
	10	900	0.17		59	10.4	0.20	1.2
	3	200	0.04		4	38.3	0.01	0.3
	15	1,800	0.34		133	9.2	0.44	1.3
	1	1,500	0.28		150	6.7	0.50	1.8
	14	7,100	1.34		548	8.8	1.88	1.4
	4	900	0.17		96	6.4	0.32	1.9
	14	2,000	0.38		155	8.8	0.53	1.4
	3	3,000	0.57		54	38.3	0.17	0.3
	16	500	0.09		37	8.8	0.13	1.4
	3	700	0.13		12	38.3	0.04	0.3
	1	1,200	0.23	1200	1,324	6.7	2.41	1.8
	3	1,700	0.32		30	38.3	0.10	0.3
	1	2,300	0.43		231	6.7	0.77	1.8
	5	100	0.02		2	33.0	0.01	0.4
	3	6,900	1.30		122	38.3	0.39	0.3
	4	600	0.11		62	6.4	0.21	1.9
	1	1,500	0.28		150	6.7	0.50	1.8
	3	500	0.09		8	38.3	0.03	0.3
	2	1,000	0.19		52	13.2	0.17	0.9
Total		244,400	46.13		44,678		61.00	
M548	2	1,600	0.30		116	9.4	0.54	1.8
	10	2,200	0.42		150	10.0	0.63	1.5
	52	600	0.11		41	10.0	0.16	1.5
	10	1,400	0.26		95	10.0	0.39	1.5
	3	300	0.06		20	10.0	0.09	1.5
	10	200	0.04		14	10.0	0.06	1.5
	3	1,100	0.21		75	10.0	0.32	1.5
	10	1,200	0.23		82	10.0	0.34	1.5
	15	500	0.09		44	7.8	0.15	1.7
	10	600	0.11		41	10.0	0.16	1.5
	6	600	0.11		49	8.4	0.26	2.4
	15	2,500	0.47		219	7.8	0.80	1.7
	10	1,900	0.36		130	10.0	0.54	1.5
	6	700	0.13		57	8.4	0.31	2.4
	15	1,500	0.28	17	131	7.8	0.48	1.7
	6	400	0.08		32	8.4	0.19	2.4
	15	1,200	0.23		105	7.8	0.39	1.7
	10	1,700	0.32		116	10.0	0.48	1.5
	14	600	0.11		60	6.8	0.36	3.3
	15	800	0.15		70	7.8	0.26	1.7
	10	4,600	0.87		314	10.0	1.30	1.5

(Continued)

Table 4 (Continued)

Dry Season (60 or 40 RCI)

Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	49	1,000	0.19		79	8.6	0.44	2.3
	6	700	0.13		57	8.4	0.31	2.4
	28	1,200	0.23		82	10.0	0.34	1.5
	3	400	0.08		27	10.0	0.12	1.5
	6	3,100	0.58		252	8.4	1.39	2.4
	32	600	0.11		41	9.9	0.16	1.5
	6	700	0.13		57	8.4	0.31	2.4
	32	4,300	0.81	17	313	9.9	1.22	1.5
	3	500	0.09		34	10.0	0.14	1.5
	37	1,200	0.23		78	10.5	0.28	1.2
	37	700	0.13		45	10.5	0.16	1.2
	82	1,000	0.19		100	6.8	0.63	3.3
	14	1,500	0.28		150	6.8	0.92	3.3
	10	2,000	0.38		136	10.0	0.57	1.5
	14	400	0.08		40	6.8	0.26	3.3
	10	400	0.08		27	10.0	0.12	1.5
	82	1,900	0.36		191	6.8	1.19	3.3
	14	200	0.04		20	6.8	0.13	3.3
	10	700	0.13		48	10.0	0.20	1.5
	3	1,200	0.23		82	10.0	0.34	1.5
	10	200	0.04		14	10.0	0.06	1.5
	10	3,800	0.72		259	10.0	1.08	1.5
	23	1,800	0.34		116	10.6	0.37	1.1
	3	600	0.11		41	10.0	0.16	1.5
	57	4,700	0.89		411	7.8	2.40	2.7
	32	3,700	0.70		255	9.9	1.05	1.5
	3	1,500	0.28		102	10.0	0.42	1.5
	32	1,000	0.19		69	9.9	0.28	1.5
	32	3,900	0.74	1,200	1,469	9.9	3.39	1.5
	3	1,200	0.23		82	10.0	0.34	1.5
	6	600	0.11		49	8.4	0.26	2.4
	32	700	0.13		48	9.9	0.20	1.5
	5	2,500	0.47		164	10.4	0.61	1.3
	5	300	0.06		20	10.4	0.08	1.3
	73	1,200	0.23		82	10.0	0.34	1.5
	3	1,400	0.26		95	10.0	0.39	1.5
	32	2,200	0.42		152	9.9	0.63	1.5
	10	1,200	023		82	10.0	0.34	1.5
	10	4,100	0.77		280	10.0	1.16	1.5
	15	3,600	0.68		267	9.2	1.29	1.9
	10	3,800	0.72		259	10.0	1.08	1.5
	10	700	0.13		48	10.0	0.20	1.5
	3	1,200	0.23		82	10.0	0.34	1.5
	10	300	0.06		20	10.0	0.09	1.5
	81	1,300	0.25		106	8.4	0.60	2.4
	69	1,400	0.26		95	10.0	0.39	1.5
	17	200	0.04		13	10.5	0.05	1.2
	25	1,200	0.23		97	8.4	0.55	2.4
	69	1,200	0.23		82	10.0	0.34	1.5
	10	2,200	0.42		150	10.0	0.63	1.5
	6	300	0.06		24	8.4	0.14	2.4
	62	6,800	1.29		539	8.6	2.97	2.3
	6	400	0.08		32	8.4	0.19	2.4
	10	700	0.13		48	10.0	0.20	1.5
	63	500	0.09		41	8.4	0.22	2.4
	62	600	0.11		48	8.6	0.25	2.3
	62	600	0.11		48	8.6	0.25	2.3
	63	4,400	0.83		357	8.4	1.99	2.4

Wet Season (60 or 40 RCI)

Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
6	1,200	0.23		97	8.4	0.55	2.4
15	3,100	0.59		230	9.2	1.12	1.9
3	300	0.06		20	10.0	0.09	1.5
2	600	0.11		44	9.4	0.21	1.9
15	300	0.06		22	9.2	0.11	1.9
3	200	0.04		14	10.0	0.06	1.5
21	300	0.06		20	10.0	0.09	1.5
2	500	0.09		36	9.4	0.16	1.8
16	300	0.06	2400	2422	9.2	4.67	1.9
15	5,900	1.12		437	9.2	2.13	1.9
10	400	0.08		27	10.0	0.12	1.5
15	700	0.13		52	9.2	0.25	1.9
10	300	0.06		20	10.0	0.09	1.5
49	900	0.17		71	8.6	0.39	2.3
6	800	0.15		65	8.4	0.36	2.4
28	700	0.13		48	10.0	0.20	1.5
6	2,900	0.55		235	8.4	1.32	2.4
89	600	0.11		54	7.6	0.31	2.8
6	500	0.09		41	8.4	0.22	2.4
30	1,300	0.25	17	121	8.5	0.58	2.3
3	1,500	0.28		102	10.0	0.42	1.5
30	1,000	0.19		80	8.5	0.44	2.3
86	500	0.09		32	10.5	0.11	1.2
37	4,900	0.93		334	10.0	1.12	1.2
82	1,000	0.19		100	6.8	0.63	3.3
14	1,400	0.26		140	6.8	0.86	3.3
15	400	0.08		30	9.2	0.15	1.9
10	1,600	0.30		109	10.0	0.45	1.5
14	300	0.06		30	6.8	0.20	3.3
15	600	0.11		44	9.2	0.21	1.9
82	1,900	0.36		191	6.8	1.19	3.3
14	200	0.04		20	6.8	0.13	3.3
15	700	0.13		52	9.2	0.25	1.9
3	1,100	0.21		75	10.0	0.32	1.5
15	4,200	0.79		311	9.2	1.50	1.9
23	2,000	0.38		129	10.6	0.42	1.1
16	600	0.11		44	9.2	0.21	1.9
57	5,300	1.00		463	7.8	2.70	2.7
30	3,200	0.60		257	8.5	1.38	2.3
3	1,200	0.23		82	10.0	0.34	1.5
30	4,500	0.85		361	8.5	1.96	2.3
3	1,300	0.25	1200	1289	10.0	2.66	1.5
6	600	0.11		49	8.4	0.26	2.4
30	700	0.13		56	8.5	0.30	2.3
5	2,700	0.51		177	10.4	0.66	1.3
73A	1,000	0.19		76	9.0	0.40	2.1
3	1,700	0.32		116	10.0	0.48	1.5
30	2,100	0.40		168	8.5	0.92	2.3
15	5,000	0.94		371	9.2	1.79	1.9
10	500	0.09		34	10.0	0.14	1.5
15	3,700	0.70		274	9.2	1.33	1.9
10	4,400	0.83		300	10.0	1.24	1.5
3	1,300	0.25		89	10.0	0.38	1.5
15	300	0.06		22	9.2	0.11	1.9

Wet Season (60 or 30 RCI)

Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
6	1,200	0.23		97	8.4	0.55	2.4
15	3,100	0.59		271	7.8	1.00	1.7
3	300	0.06		20	10.0	0.09	1.5
2	600	0.11		44	9.4	0.21	1.7
15	300	0.06		26	7.8	0.10	1.7
3	200	0.04		14	10.0	0.06	1.5
21	300	0.06		20	10.0	0.09	1.5
2	500	0.09		36	9.4	0.16	1.8
16	300	0.06	2400	2426	7.8	4.66	1.7
15	5,900	1.12		515	7.8	1.90	1.7
10	400	0.08		27	10.0	0.12	1.5
15	700	0.13		61	7.8	0.22	1.7
10	300	0.06		20	10.0	0.09	1.5
49	900	0.17		71	8.6	0.39	2.3
6	800	0.15		65	8.4	0.36	2.4
28	700	0.13		46	10.0	0.20	1.5
6	2,900	0.55		235	8.4	1.32	2.4
89	600	0.11		54	7.6	0.31	2.8
6	500	0.09		41	8.4	0.22	2.4
30	1,300	0.25	17	147	6.8	0.82	3.3
3	1,500	0.28		102	10.0	0.42	1.5
30	1,000	0.19		100	6.8	0.63	3.3
86	500	0.09		32	10.5	0.11	1.2
37	4,900	0.93		334	10.0	1.12	1.2
82	1,000	0.19		100	6.8	0.63	3.3
14	1,400	0.26		140	6.8	0.86	3.3
15	400	0.08		35	7.8	0.14	1.7
10	1,600	0.30		109	10.0	0.45	1.5
14	300	0.06		30	6.8	0.20	3.3
15	600	0.11		52	7.8	0.19	1.7
82	1,900	0.36		191	6.8	1.19	3.3
14	200	0.04		20	6.8	0.13	3.3
15	700	0.13		61	7.8	0.22	1.7
3	1,100	0.21		75	10.0	0.32	1.5
15	4,200	0.79		367	7.8	1.34	1.7
23	2,000	0.38		129	10.6	0.42	1.1
16	600	0.11		52	7.8	0.19	1.7
57	5,300	1.00		463	7.8	2.70	2.7
30	3,200	0.60		321	6.8	1.98	3.3
3	1,200	0.23		82	10.0	0.34	1.5
30	4,500	0.85		451	6.8	2.80	3.3
3	1,300	0.25	1200	1289	10.0	2.66	1.5
6	600	0.11		49	8.4	0.26	2.4
30	700	0.13		70	6.8	0.43	3.3
5	2,700	0.51		177	10.4	0.66	1.3
73A	1,000	0.19		87	7.8	0.32	1.7
3	1,700	0.32		116	10.0	0.48	1.5
30	2,100	0.40		211	6.8	1.32	3.3
15	5,000	0.94		437	7.8	1.60	1.7
10	500	0.09		34	10.0	0.14	1.5
15	3,700	0.70		323	7.8	1.15	1.7
10	4,400	0.83		300	10.0	1.24	1.5
3	1,300	0.25		89	10.0	0.38	1.5
15	300	0.06		26	7.8	0.10	1.7

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	31	3,000	0.57		205	10.0	0.86	1.5
	55	900	0.17		61	10.0	0.26	1.5
	31	1,600	0.30		109	10.0	0.45	1.5
	55	700	0.13		48	10.0	0.20	1.5
	55	1,800	0.34		123	10.0	0.51	1.5
	55	200	0.04		14	10.0	0.06	1.5
	31	1,600	0.30		109	10.0	0.45	1.5
	10	1,000	0.19		68	10.0	0.28	1.5
	3	1,300	0.25		89	10.0	0.38	1.5
	16	800	0.15		59	9.2	0.28	1.9
	15	1,600	0.30		119	9.2	0.57	1.9
	10	1,200	0.23		82	10.0	0.34	1.5
	10	700	0.13		48	10.0	0.20	1.5
	15	2,800	0.53		208	9.2	1.01	1.9
	3	700	0.13		48	10.0	0.20	1.5
	3	200	0.04		14	10.0	0.06	1.5
	15	1,500	0.28		111	9.2	0.53	1.9
	10	1,400	0.26		95	10.0	0.39	1.5
	3	2,400	0.45		164	10.0	0.68	1.5
	10	1,100	0.21		75	10.0	0.32	1.5
	3	700	0.13		48	10.0	0.20	1.5
	10	1,200	0.23		82	10.0	0.34	1.5
	3	2,200	0.42		150	10.0	0.63	1.5
	28	800	0.15		55	10.0	0.22	1.5
	3	1,900	0.36		130	10.0	0.54	1.5
	21	500	0.09		34	10.0	0.14	1.5
	22	1,700	0.32		126	9.2	0.61	1.9
	21	600	0.11		41	10.0	0.16	1.5
	22	600	0.11		44	9.2	0.21	1.9
	21	600	0.11	17	58	10.0	0.16	1.5
	22	2,500	0.47		185	9.2	0.89	1.9
	3	1,500	0.28		102	10.0	0.42	1.5
	21	1,400	0.26		95	10.0	0.39	1.5
	3	600	0.11		41	10.0	0.16	1.5
	21	2,300	0.43		157	10.0	0.64	1.5
	3	1,700	0.32		116	10.0	0.48	1.5
	10	1,600	0.30		109	10.0	0.45	1.5
	3	500	0.09		34	10.0	0.14	1.5
	10	500	0.09		34	10.0	0.14	1.5
	3	1,500	0.28		102	10.0	0.42	1.5
	10	1,300	0.25		89	10.0	0.38	1.5
	15	700	0.13		50	9.2	0.25	1.9
	15	4,500	0.85		334	9.2	1.62	1.9
	3	500	0.09		34	10.0	0.14	1.5
	10	400	0.08		27	10.0	0.12	1.5
	3	1,800	0.34		123	10.0	0.51	1.5
	10	300	0.06		20	10.0	0.09	1.5
	15	400	0.08		30	9.2	0.15	1.9
	3	1,500	0.28		102	10.0	0.42	1.5
	3	7,000	1.32	1200	1,677	10.0	4.26	1.5
	69	1,200	0.23		82	10.0	0.34	1.5
	13	3,000	0.57		20,454	0.1	3.36	5.9
	10	2,100	0.40		143	10.0	0.60	1.5
	10	3,600	0.68		245	10.0	1.02	1.5
	14	1,700	0.32		170	6.8	1.06	3.3
	1	200	0.04		15	9.2	0.08	1.9
	1	1,700	0.32		126	9.2	0.61	1.9
	4	1,300	0.25		89	10.0	0.38	1.5

Wet Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
81	1,300	0.25		106	8.4	0.60	2.4
69	300	0.06		20	10.0	0.09	1.5
94	1,000	0.19		74	9.2	0.36	1.9
17	500	0.09		32	10.5	0.11	1.2
25	1,100	0.21		89	8.4	0.50	2.4
69	1,600	0.30		109	10.0	0.45	1.5
25	900	0.17		73	8.4	0.41	2.4
10	500	0.09		34	10.0	0.14	1.5
15	100	0.02		7	9.2	0.04	1.9
10	400	0.08		27	10.0	0.12	1.5
6	300	0.06		24	8.4	0.14	2.4
62	6,800	1.29		539	8.6	2.97	2.3
6	300	0.06		24	8.4	0.14	2.4
15	800	0.15		59	9.2	0.28	1.9
63	400	0.08		32	8.4	0.19	2.4
62	1,000	0.19		79	8.6	0.44	2.3
63	4,200	0.79		341	8.4	1.90	2.4
31	400	0.08		27	10.0	0.12	1.5
55	700	0.13		48	10.0	0.20	1.5
31	2,900	0.55		198	10.0	0.82	1.5
80	1,400	0.26		104	9.2	0.49	1.9
31	3,400	0.64		232	10.0	0.96	1.5
10	2,500	0.47		170	10.0	0.70	1.5
31	400	0.08		27	10.0	0.12	1.5
10	1,200	0.23		82	10.0	0.34	1.5
31	800	0.15		55	10.0	0.22	1.5
10	2,800	0.53		191	10.0	0.80	1.5
2	2,800	0.53		203	9.4	0.95	1.8
10	300	0.06		20	10.0	0.09	1.5
15	1,000	0.19	1200	1274	9.2	2.64	1.9
10	3,200	0.60		218	10.0	0.90	1.5
15	1,100	0.21		82	9.2	0.40	1.9
3	2,100	0.40		143	10.0	0.60	1.5
21	500	0.09		34	10.0	0.14	1.5
3	1,400	0.26		95	10.0	0.39	1.5
28	800	0.15		55	10.0	0.22	1.5
3	1,900	0.36		130	10.0	0.54	1.5
21	600	0.11		41	10.0	0.16	1.5
22	2,800	0.53		208	9.2	1.01	1.9
21	600	0.11		41	10.0	0.16	1.5
22	2,500	0.47		185	9.2	0.89	1.9
3	1,500	0.28	1200	1302	10.0	2.70	1.5
21	1,400	0.26		95	10.0	0.39	1.5
3	600	0.11		41	10.0	0.16	1.5
21	1,200	0.23		82	10.0	0.34	1.5
3	3,100	0.59		211	10.0	0.88	1.5
10	1,300	0.25		89	10.0	0.38	1.5
3	500	0.09		34	10.0	0.14	1.5
10	600	0.11		41	10.0	0.16	1.5
3	1,600	0.30		109	10.0	0.45	1.5
10	1,200	0.23		82	10.0	0.34	1.5
15	5,000	0.94		377	9.2	1.79	1.9
3	600	0.11		41	10.0	0.16	1.5
10	300	0.06		20	10.0	0.09	1.5

Wet Season ([illegible] or 3[illegible] RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
81	1,300	0.25		106	8.4	0.60	2.4
69	300	0.06		20	10.0	0.09	1.5
94	1,000	0.19		87	7.8	0.32	1.7
17	500	0.09		32	10.5	0.11	1.2
25	1,100	0.21		89	8.4	0.50	2.4
69	1,600	0.30		109	10.0	0.45	1.5
25	900	0.17		73	8.4	0.41	2.4
10	500	0.09		34	10.0	0.14	1.5
15	100	0.02		9	7.8	0.03	1.7
10	400	0.08		27	10.0	0.12	1.5
6	300	0.06		24	8.4	0.14	2.4
62	6,800	1.29		539	8.6	2.97	2.3
6	300	0.06		24	8.4	0.14	2.4
15	800	0.15		70	7.8	0.26	1.7
63	400	0.08		32	8.4	0.19	2.4
62	1,000	0.19		79	8.6	0.44	2.3
63	4,200	0.79		341	8.4	1.90	2.4
31	400	0.08		27	10.0	0.12	1.5
55	700	0.13		48	10.0	0.20	1.5
31	2,900	0.55		198	10.0	0.82	1.5
80	1,400	0.26		104	9.2	0.49	1.9
31	3,400	0.64		232	10.0	0.96	1.5
10	2,500	0.47		170	10.0	0.70	1.5
31	400	0.08		27	10.0	0.12	1.5
10	1.200	0.23		82	10.0	0.34	1.5
31	800	0.15		55	10.0	0.22	1.5
10	2,800	0.53		191	10.0	0.80	1.5
2	2,800	0.53		203	9.4	0.95	1.8
10	300	0.06		20	10.0	0.09	1.5
15	1,000	0.19	1200	1287	7.8	2.60	1.7
10	3,200	0.60		218	10.0	0.90	1.5
15	1,100	0.21		96	7.8	0.36	1.7
3	2,100	0.40		143	10.0	0.60	1.5
21	500	0.09		34	10.0	0.14	1.5
3	1,400	0.26		95	10.0	0.39	1.5
28	800	0.15		55	10.0	0.22	1.5
3	1,900	0.36		130	10.0	0.54	1.5
21	600	0.11		41	10.0	0.16	1.5
22	2,800	0.53		245	7.8	0.90	1.7
21	600	0.11		41	10.0	0.16	1.5
22	2,500	0.47		219	7.8	0.80	1.7
3	1,500	0.28	1200	1302	10.0	2.70	1.5
21	1,400	0.26		95	10.0	0.39	1.5
3	600	0.11		41	10.0	0.16	1.5
21	1,200	0.23		82	10.0	0.34	1.5
3	3,100	0.59		211	10.0	0.88	1.5
10	1,300	0.25		89	10.0	0.38	1.5
3	500	0.09		34	10.0	0.14	1.5
10	600	0.11		41	10.0	0.16	1.5
3	1,600	0.30		109	10.0	0.45	1.5
10	1,200	0.23		82	10.0	0.34	1.5
15	5,000	0.94		437	7.8	1.60	1.7
3	600	0.11		41	10.0	0.16	1.5
10	300	0.06		20	10.0	0.09	1.5

(Continued)

Table 4 (Continued)

Dry Season (60 or 40 RCI)

Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	4	1,400	0.26		95	10.0	0.39	1.5
	4	1,500	0.28		102	10.0	0.42	1.5
	4	2,400	0.45		164	10.0	0.68	1.5
	3	1,700	0.32		116	10.0	0.48	1.5
	3	1,200	0.23		82	10.0	0.34	1.5
	4	700	0.13		48	10.0	0.20	1.5
	3	200	0.04		14	10.0	0.06	1.5
	4	1,800	0.34	1,200	1,323	10.0	2.79	1.5
	3	1,400	0.26		95	10.0	0.39	1.5
	4	2,200	0.42		150	10.0	0.63	1.5
	5	2,200	0.42		144	10.4	0.55	1.3
	3	1,200	0.23		82	10.0	0.34	1.5
	4	300	0.06		20	10.0	0.09	1.5
	3	200	0.04		14	10.0	0.06	1.5
	4	600	0.11		41	10.0	0.16	1.5
	3	1,700	0.32		116	10.0	0.48	1.5
	7	1,200	0.23		154	5.3	0.94	4.1
	4	1,200	0.23		82	10.0	0.34	1.5
	1	900	0.17		67	9.2	0.32	1.9
Totals		240,000	45.35		43,486		91.26	
M113A1	2	1,700	0.32		95	12.1	0.35	1.1
	3	1,700	0.32		30	39.0	0.64	0.2
	6	2,800	0.53		178	10.7	0.69	1.3
	10	1,400	0.26		87	10.7	0.21	0.8
	3	1,000	0.19		18	39.0	0.38	0.2
	10	1,400	0.26		87	10.7	0.21	0.8
	6	1,000	0.19		64	10.7	0.25	1.3
	10	1,100	0.21		71	10.7	0.27	0.8
	3	200	0.04		4	39.0	0.01	0.2
	10	2,100	0.40		135	10.7	0.32	0.8
	6	1,100	0.21		71	10.7	0.27	1.3
	10	2,100	0.40	17	152	10.7	0.32	0.8
	6	600	0.11		37	10.7	0.14	1.3
	10	700	0.13		44	10.7	0.10	0.8
	6	2,600	0.49		165	10.7	0.64	1.3
	10	3,000	0.57		192	10.7	0.46	0.8
	6	800	0.13		50	10.7	0.20	1.3
	14	1,400	0.26		87	10.7	0.21	0.8
	6	1,000	0.19		64	10.7	0.25	1.3
	10	1,400	0.26		87	10.7	0.21	0.8

Wet Season (60 or 40 RCI)

Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	3	1,900	0.36		130	10.0	0.54	1.5
	10	400	0.08		27	10.0	0.12	1.5
	15	300	0.06		22	9.2	0.11	1.9
	10	100	0.02		7	10.0	0.03	1.5
	3	2,200	0.42	1200	1350	10.0	2.91	1.5
	16	300	0.06		22	9.2	0.11	1.9
	3	2,500	0.47		170	10.0	0.70	1.5
	16	600	0.11		44	9.2	0.21	1.9
	3	2,500	0.47		170	10.0	0.70	1.5
	9a	1,200	0.23		89	9.2	0.44	1.9
	13	3,000	0.57		20,454	0.1	3.36	5.9
	15	3,900	0.74		289	9.2	1.41	1.9
	14	600	0.11		60	6.8	0.36	3.3
	10	1,000	0.19		68	10.0	0.28	1.5
	14	1,900	0.36		791	6.8	1.19	3.3
	1	8,500	1.61		630	9.2	3.06	1.9
	3	2,700	0.51		184	10.0	0.76	1.5
	1	3,600	0.68	1200	1467	9.2	3.57	1.9
	3	1,100	0.21		75	10.0	0.32	1.5
	1	2,400	0.45		178	9.2	0.86	1.9
	5	2,000	0.38		131	10.4	0.49	1.3
	3	1,300	0.25		89	10.0	0.38	1.5
	1	300	0.06		22	9.2	0.11	1.9
	4	700	0.13		48	10.0	0.20	1.5
	3	1,500	0.28		102	10.0	0.42	1.5
	4	1,200	0.23		82	10.0	0.34	1.5
	1	2,900	0.55		215	9.2	1.04	1.9
	2	700	0.13		51	9.4	0.25	1.8
Totals		241,200	45.60		46,392		102.00	

Wet Season (60 or 35 RCI)

Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	3	1,900	0.36		130	10.0	0.54	1.5
	10	400	0.08		27	10.0	0.12	1.5
	15	300	0.06		26	7.8	0.10	1.7
	10	100	0.02		7	10.0	0.03	1.5
	3	2,200	0.42	1200	1350	10.0	2.91	1.5
	16	300	0.06		26	7.8	0.10	1.7
	3	2,500	0.47		170	10.0	0.70	1.5
	16	600	0.11		52	7.8	0.19	1.7
	3	2,500	0.47		170	10.0	0.70	1.5
	9a	1,200	0.23		105	7.8	0.39	1.7
	13	3,000	0.57		20,454	0.1	3.36	5.9
	15	3,900	0.74		341	7.8	1.26	1.7
	14	600	0.11		60	6.8	0.36	3.3
	10	1,000	0.19		68	10.0	0.28	1.5
	14	1,900	0.36		791	6.8	1.19	3.3
	1	8,500	1.61		630	9.2	3.06	1.9
	3	2,700	0.51		184	10.0	0.76	1.5
	1	3,600	0.68	1200	1467	9.2	3.57	1.9
	3	1,100	0.21		75	10.0	0.32	1.5
	1	2,400	0.45		178	9.2	0.86	1.9
	5	2,000	0.38		131	10.4	0.49	1.3
	3	1,300	0.25		89	10.0	0.38	1.5
	1	300	0.06		22	9.2	0.11	1.9
	4	700	0.13		48	10.0	0.20	1.5
	3	1,500	0.28		102	10.0	0.42	1.5
	4	1,200	0.23		82	10.0	0.34	1.5
	1	2,900	0.55		215	9.2	1.04	1.9
	2	700	0.13		51	9.4	0.23	1.8
Totals		241,200	45.60		47,945		102.4[illegible]	
M113A1	2	1,700	0.32		95	12.1	0.35	1.1
	3	1,600	0.30		28	39.0	0.06	0.2
	6	2,800	0.53		178	10.7	0.69	1.3
	15	800	0.15		52	10.3	0.12	0.8
	10	1,000	0.19		64	10.7	0.15	0.8
	3	900	0.17		16	39.0	0.03	0.2
	10	500	0.09		30	10.7	0.07	0.8
	6	1,400	0.26		55	10.7	0.34	1.3
	15	900	0.17		59	10.3	0.14	0.8
	3	1,400	0.26		24	39.0	0.05	0.2
	15	1,100	0.21		73	10.3	0.17	0.8
	6	1,900	0.36		121	10.7	0.47	1.3
	15	1,700	0.32	1200	1,312	10.3	2.20	0.8
	6	600	0.11		37	10.7	0.14	1.3
	10	600	0.11		37	10.7	0.09	0.8
	6	1,200	0.23		77	10.7	0.30	1.3
	10	600	0.11		37	10.7	0.09	0.8
	6	1,300	0.25		84	10.7	0.32	1.3
	15	1,600	0.30		105	10.3	0.24	0.8
	10	100	0.02		7	10.7	0.02	0.8

(Continued)

Table 4 (Continued)

Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	Dry Season (60 or 40 RCI)							
	3	1,300	0.25		23	39.0	0.05	0.2
	2	1,400	0.26		77	12.1	0.29	1.1
	3	200	0.04		4	39.0	0.01	0.2
	10	6,800	1.29	2400	2,834	10.7	5.03	0.8
	49	1,100	0.21		44	17.3	0.19	0.9
	6	700	0.13		44	10.7	0.17	1.3
	28	1,400	0.26		24	39.0	0.05	0.2
	6	2,300	0.43		145	10.7	0.56	1.3
	89	700	0.13		44	10.2	0.17	1.3
	6	800	0.15		50	10.7	0.20	1.3
	32	1,000	0.19	17	154	5.0	0.27	1.4
	3	1,400	0.26		24	39.0	0.05	0.2
	32	1,100	0.21		151	5.0	0.29	1.4
	37	3,500	0.66		61	39.0	0.13	0.2
	87	600	0.11		37	10.2	0.14	1.3
	14	3,300	0.62		237	9.4	0.87	1.4
	10	1,900	0.36		121	10.7	0.29	0.8
	14	800	0.15		57	9.4	0.21	1.4
	82	1,900	0.36		141	9.2	0.54	1.5
	14	300	0.06		23	9.4	0.08	1.4
	10	700	0.13		44	10.7	0.10	0.8
	3	1,100	0.21		19	39.0	0.04	0.2
	10	4,500	0.85		286	10.7	0.68	0.8
	23	1,700	0.32		94	12.2	0.35	1.1
	3	900	0.17		16	39.0	0.03	0.2
	57	6,900	1.30		433	10.8	1.69	1.3
	32	400	0.08		58	5.0	0.11	1.4
	2	800	0.15		45	12.1	0.16	1.1
	16	600	0.11		32	12.2	0.12	1.1
	30	300	0.06		44	4.9	0.09	1.5
	3	800	0.15		14	39.0	0.03	0.2
	2	1,000	0.19		57	12.1	0.21	1.1
	3	500	0.09		8	39.0	0.02	0.2
	32	2,100	0.04	1200	1.488	5.0	2.56	1.4
	3	600	0.11		10	39.0	0.02	0.2
	2	800	0.15		45	12.1	0.16	1.1
	3	1,500	0.28		26	39.0	0.06	0.2
	6	800	0.15		50	10.7	0.20	1.3
	32	600	0.11		79	5.0	0.15	1.4
	5	1,700	0.32		94	12.2	0.35	1.1
	3	1,700	0.32		30	39.0	0.06	0.2
	73	300	0.06		18	12.1	0.03	0.5
	22	900	0.17		58	10.5	0.14	0.8
	16	1,500	0.28		83	12.2	0.31	1.1
	3	1,000	0.19		18	39.0	0.04	0.2
	32	800	0.15		108	5.0	0.21	1.4
	3	400	0.08		7	39.0	0.02	0.2
	10	1,600	0.30		101	10.7	0.24	0.8
	15	700	0.13		45	10.3	0.10	0.8
	10	2,800	0.53		178	10.7	0.42	0.8
	15	3,700	0.70		245	10.3	0.56	0.8
	10	1,100	0.21		71	10.7	0.17	0.8
	57	1,100	0.21		70	10.8	0.27	1.3
	10	300	0.06		20	10.7	0.05	0.8
	3	2,700	0.51		47	39.0	0.10	0.2

Wet Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile

Wet Season (60 or 35 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
6	600	0.11		37	10.7	0.14	1.3
10	800	0.15		50	10.7	0.12	0.8
6	1,000	0.19		64	10.7	0.25	1.3
15	800	0.15		52	10.3	0.12	0.8
6	1,200	0.23		77	10.7	0.30	1.3
15	600	0.11		38	10.3	0.09	0.8
3	1,000	0.19		17	39.0	0.04	0.2
2	1,500	0.28		83	12.1	0.31	1.1
16	200	0.04		12	12.2	0.05	1.1
15	5,900	1.12	2400	2,791	10.3	4.90	0.8
10	400	0.08		27	10.7	0.06	0.8
15	800	0.15		52	10.3	0.12	0.8
10	100	0.02		7	10.7	0.02	0.8
49	1,100	0.21		44	17.3	0.19	0.9
6	700	0.13		44	10.7	0.17	1.3
28	1,400	0.26		24	39.0	0.05	0.2
6	2,300	0.43		145	10.7	0.34	0.8
89	700	0.13		46	10.2	0.17	1.3
6	800	0.15		50	10.7	0.12	0.8
30	1,000	0.19		140	4.9	0.28	1.5
3	1,400	0.26	17	41	39.0	0.05	0.2
30	1,200	0.23		169	4.9	0.34	1.5
37	3,400	0.64		59	39.0	0.13	0.2
87	600	0.11		39	10.2	0.14	1.3
14	2,800	0.53		214	9.4	0.74	1.4
10	1,900	0.36		121	10.7	0.29	0.8
14	800	0.15		57	9.4	0.21	1.4
82	1,900	0.36		141	9.2	0.54	1.5
14	300	0.06		23	9.4	0.08	1.4
15	700	0.13		45	10.3	0.10	0.8
3	1,200	0.23		21	39.0	0.05	0.2
15	2,600	0.49		171	10.3	0.39	0.8
10	800	0.15		50	10.7	0.12	0.8
15	900	0.17		59	10.3	0.14	0.8
23	1,800	0.34		100	12.2	0.37	1.1
16	900	0.17		50	12.2	0.19	1.1
57	6,900	1.30		433	10.8	1.69	1.3
30	500	0.09		66	4.9	0.14	1.5
2	1,000	0.19		57	12.1	0.21	1.1
16	200	0.04		12	12.2	0.04	1.1
30	700	0.13		96	4.9	0.20	1.5
3	400	0.08		7	39.0	0.02	0.2
2	1,100	0.21		62	12.1	0.23	1.1
3	400	0.08		7	39.0	0.02	0.2
30	2,300	0.43	1200	1,516	4.9	2.64	1.5
2	700	0.13		39	12.1	0.16	1.1
3	1,200	0.23		21	39.0	0.05	0.2
6	1,000	0.19		64	10.7	0.15	0.8
30	600	0.11		81	4.9	0.16	1.5
5	1,200	0.23		68	12.2	0.25	1.1

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 35 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	10	400	0.08		27	10.7	0.06	0.8									3	1,300	0.25		23	39.0	0.05	0.2
	81	1,300	0.25		84	10.7	0.32	1.3									13	800	0.15		415	1.3	1.38	9.2
	69	1,500	0.28		94	10.7	0.22	0.8									3	3,300	0.62		57	39.0	0.12	0.2
	17	1,900	0.36		33	39.0	0.07	0.2									30	1,200	0.23		169	4.9	0.34	1.5
	69	1,400	0.26		87	10.7	0.09	0.8									3	200	0.04		4	39.0	0.01	0.2
	70	900	0.17		51	12.1	0.19	1.1									15	2,300	0.43		150	10.3	0.34	0.8
	69	300	0.06		20	10.7	0.05	0.8									10	500	0.09		30	10.7	0.07	0.8
	10	800	0.15		50	10.7	0.12	0.8									15	1,700	0.32		112	10.3	0.26	0.8
	6	1,000	0.19		64	10.7	0.25	1.3									10	600	0.11		37	10.7	0.09	0.8
	62	6,100	1.15		239	17.3	1.04	0.9									15	3,700	0.70		245	10.3	0.56	0.8
	6	300	0.06		20	10.7	0.08	1.3									10	2,900	0.55		185	10.7	0.44	0.8
	10	800	0.15		50	10.7	0.12	0.8									3	2,200	0.42		39	39.0	0.08	0.2
	63	300	0.06		20	10.7	0.08	1.3									15	800	0.15		52	10.3	0.12	0.8
	62	1,800	0.34		71	17.3	0.31	0.9									81	800	0.15		50	10.7	0.20	1.3
	63	3,900	0.74		249	10.7	0.96	1.3									69	400	0.08		27	10.7	0.06	0.8
	31	4,300	0.81		75	39.0	0.16	0.2									94	900	0.17		50	12.2	0.19	1.1
	55	1,000	0.19		64	10.7	0.15	0.8									17	500	0.09		8	39.0	0.02	0.2
	31	4,100	0.77		71	39.0	0.15	0.2									25	3,700	0.70		236	10.7	0.91	1.3
	10	1,800	0.34		114	10.7	0.27	0.8									15	1,300	0.25		87	10.3	0.20	0.8
	3	1,800	0.34		31	39.0	0.07	0.2									6	800	0.15		50	10.7	0.12	0.8
	16	400	0.08		24	12.2	0.09	1.1									62	5,600	1.06		221	17.3	0.95	0.9
	15	1,500	0.28		98	10.3	0.22	0.8									15	1,000	0.19		66	10.3	0.15	0.8
	10	1,900	0.36		121	10.7	0.29	0.8									63	500	0.09		30	10.7	0.12	1.3
	15	2,900	0.55		192	10.3	0.44	0.8									62	800	0.15		31	17.3	0.14	0.9
	3	800	0.15		14	39.0	0.03	0.2									63	800	0.15		50	10.7	0.20	1.3
	15	1,700	0.32		112	10.3	0.26	0.8									62	900	0.17		35	17.3	0.15	0.9
	10	800	0.15		50	10.7	0.12	0.8									63	4,400	0.83		279	10.7	1.08	1.3
	3	4,500	0.85		78	39.0	0.17	0.2									80	700	0.13		38	12.2	0.14	1.1
	10	1,200	0.23		77	10.7	0.18	0.8									31	1,400	0.26		24	39.0	0.05	0.2
	3	2,300	0.42		39	39.0	0.08	0.2									80	400	0.08		24	12.2	0.09	1.1
	28	800	0.15		14	39.0	0.03	0.2									31	200	0.04		4	39.0	0.01	0.2
	3	1,900	0.36		33	39.0	0.07	0.2									80	600	0.11		32	12.2	0.12	1.1
	21	500	0.09		30	10.7	0.07	0.8									31	3,400	0.64		59	39.0	0.13	0.2
	22	1,700	0.32		112	10.3	0.26	0.8									10	1,400	0.26		87	10.7	0.21	0.8
	21	600	0.11		37	10.7	0.09	0.8									15	600	0.11		38	10.3	0.12	0.8
	22	600	0.11		38	10.3	0.09	0.8									31	100	0.02		8	9.0	0.01	0.2
	21	700	0.13		44	10.7	0.10	0.8									10	1,000	0.19		64	10.7	0.15	0.8
	22	2,300	0.43		150	10.3	0.34	0.8									3	1,400	0.26		24	39.0	0.05	0.2
	3	2,100	0.40	17	54	39.0	0.08	0.2									16	400	0.08		24	12.2	0.09	1.1
	21	800	0.15		50	10.7	0.12	0.8									15	1,700	0.32		112	10.3	0.26	0.8
	3	9,000	1.70		157	39.0	0.34	0.2									10	1,900	0.36		121	10.7	0.29	0.8
	10	1,400	0.26		87	10.7	0.21	0.8									15	5,500	1.04		363	10.3	0.83	0.8
	15	5,000	0.94		329	10.3	0.75	0.8									3	2,300	0.43		40	39.0	0.09	0.2
	3	600	0.11		10	39.0	0.02	0.2									10	500	0.09		30	10.7	0.07	0.8
	10	300	0.06		20	10.7	0.05	0.8									3	2,300	0.43		40	39.0	0.09	0.2
	3	2,500	0.47		43	39.0	0.09	0.2									15	500	0.09		31	10.3	0.07	0.8
	10	400	0.08		27	10.7	0.06	0.8									10	400	0.08		27	10.7	0.06	0.8
	3	10,600	2.00		202	39.0	0.40	0.2									15	400	0.08		28	10.3	0.06	0.8
	69	1,700	0.32		108	10.7	0.26	0.8									3	2,200	0.42		39	39.0	0.08	0.2
	13	2,900	0.55		1,523	1.3	5.06	9.2									28	900	0.17		16	39.0	0.03	0.2
	10	500	0.09		30	10.7	0.07	0.8																
	3	700	0.13		12	39.0	0.03	0.2																
	10	1,900	0.36		121	10.7	0.29	0.8																
	4	1,900	0.36		191	6.8	0.43	1.2																
	14	9,600	1.81		693	9.4	2.53	1.4																

(Continued)

Table 4 (Continued)

	Dry Season (60 or 40 RCI)								Wet Season (60 or 40 RCI)								Wet Season (50 or 30 RCI)							
Vehicle	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	3	3,700	0.70	1200	1,265	39.0	2.14	0.2									3	1,900	0.36		33	39.0	0.07	0.2
	4	2,000	0.38		201	6.8	0.46	1.2									15	300	0.06		21	10.3	0.05	0.8
	3	1,400	0.26		24	39.0	0.05	0.2									22	1,700	0.32		112	10.3	0.26	0.8
	4	2,200	0.42		222	6.8	0.50	1.2									21	800	0.15		50	10.7	0.12	0.8
	5	200	0.04		12	12.2	0.04	1.1									22	600	0.11		38	10.3	0.09	0.8
	3	6,100	1.15		106	39.0	0.23	0.2									21	600	0.11		37	10.7	0.09	0.8
	4	2,900	0.55		291	6.8	0.66	1.2									22	2,400	0.45		157	10.3	0.36	0.8
	3	500	0.09		8	39.0	0.02	0.2									3	2,100	0.40	1200	1,237	39.0	2.08	0.2
	2	1,000	0.19		57	12.1	0.21	1.1									21	800	0.15		50	10.7	0.12	0.8
																	3	5,600	1.06		98	39.0	0.21	0.2
																	10	1,000	0.19		64	10.7	0.15	0.8
																	3	200	0.04		4	39.0	0.01	0.2
																	10	600	0.11		37	10.7	0.09	0.8
																	3	1,000	0.19		17	39.0	0.04	0.2
																	10	1,400	0.26		87	10.7	0.21	0.8
																	15	5,000	0.94		329	10.3	0.75	0.8
																	3	500	0.09		8	39.0	0.02	0.2
																	10	400	0.08		27	10.7	0.06	0.8
																	3	2,300	0.43		40	39.0	0.09	0.2
																	10	500	0.09		30	10.7	0.07	0.8
																	3	300	0.06		6	39.0	0.01	0.2
																	15	200	0.04		14	10.3	0.03	0.8
																	3	7,600	1.44	17	150	39.0	0.03	0.2
																	15	500	0.09		31	10.3	0.07	0.8
																	16	300	0.06		18	12.2	0.07	1.1
																	15	1,200	0.23		80	10.3	0.18	0.8
																	13	3,200	0.60		1,662	1.3	5.52	9.2
																	15	3,900	0.74		259	10.3	0.59	0.8
																	14	900	0.17		65	9.4	0.24	1.4
																	4	400	0.08		42	6.8	0.15	1.2
																	14	10,300	1.95		747	9.4	3.32	1.4
																	3	2,900	0.55		51	39.0	0.11	0.2
																	1	600	0.11		59	6.7	0.13	1.2
																	4	500	0.09		48	6.8	0.11	1.2
																	1	1,400	0.26	1200	1,340	6.7	2.31	1.2
																	3	1,400	0.26		24	39.0	0.05	0.2
																	1	2,500	0.47		253	6.7	0.06	1.2
																	5	400	0.08		24	12.2	0.09	1.1
																	3	6,800	1.29		119	39.0	0.26	0.2
																	7A	1,800	0.34		612	2.0	1.94	2.8
																	3	900	0.17		16	39.0	0.03	0.2
																	2	900	0.17		51	12.1	0.19	1.1
Total		245,200	46.26		18,635		48.39											240,700	45.42		22,298		55.60	

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI)									Wet Season (60 or 40 RCI)									Wet Season (60 or 35 RCI)								
	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
M116	2	1,700	0.32		101	11.4	0.38	1.2									2	1,600	0.30		95	11.4	0.36	1.2
	3	1,600	0.30		34	32.1	0.12	0.4									3	1,700	0.32		36	32.1	0.13	0.4
	6	2,800	0.53		129	14.8	0.48	0.9									6	2,700	0.51		124	14.8	0.46	0.9
	10	1,100	0.21		68	11.1	0.27	1.3									15	900	0.17		56	10.9	0.22	1.3
	3	1,300	0.25		28	32.1	0.10	0.4									10	800	0.15		49	11.1	0.20	1.3
	10	1,500	0.28		91	11.1	0.36	1.3									3	1,200	0.23		26	32.1	0.09	0.4
	6	1,000	0.19		46	14.8	0.17	0.9									10	300	0.06		19	11.1	0.08	1.3
	10	3,300	0.62		201	11.1	0.81	1.3									6	1,300	0.25		61	14.8	0.22	0.9
	6	2,000	0.38		92	14.8	0.34	0.9									15	900	0.17		56	10.9	0.22	1.3
	10	1,200	0.23	17	92	11.1	0.30	1.3									3	1,200	0.23		26	32.1	0.09	0.4
	6	600	0.11		27	14.8	0.10	0.9									15	1,400	0.27		89	10.9	0.35	1.3
	10	700	0.13		42	11.1	0.17	1.3									6	1,900	0.36		88	14.8	0.32	0.9
	6	2,000	0.38		92	14.8	0.34	0.9									15	600	0.11		36	10.9	0.14	1.3
	10	900	0.17		55	11.1	0.22	1.3									15	800	0.15	17	67	10.9	0.20	1.3
	6	4,100	0.77		187	14.8	0.69	0.9									6	2,800	0.53		129	14.8	0.48	0.9
	10	1,700	0.32		104	11.1	0.42	1.3									10	300	0.06		19	11.1	0.08	1.3
	3	3,800	0.72		81	32.1	0.29	0.4									6	1,700	0.32		78	14.8	0.29	0.9
	10	1,000	0.19	1200	1,262	11.1	2.35	1.3									15	1,100	0.21		69	10.9	0.27	1.3
	3	1,100	0.21	34	58	32.1	0.08	0.4									10	1,200	0.23		75	11.1	0.30	1.3
	32	1,500	0.28		194	5.2	0.67	2.4									6	1,400	0.27		66	14.8	0.24	0.9
	3	1,000	0.19		21	32.1	0.08	0.4									15	1,600	0.30		99	10.9	0.39	1.3
	47	600	0.11		76	5.2	0.26	2.4									6	1,100	0.21		51	14.8	0.19	0.9
	3	2,100	0.40		45	32.1	0.16	0.4									3	2,700	0.51	1200	1,257	32.1	2.30	0.4
	36	2,900	0.55		178	11.1	0.72	1.3									15	1,000	0.19		63	10.9	0.25	1.3
	10	300	0.06		19	11.1	0.08	1.3									12	1,400	0.27	17	204	5.2	0.65	2.4
	6	2,400	0.45		109	14.8	0.40	0.9									30	2,100	0.40	17	294	5.2	0.96	2.4
	89	600	0.11		42	9.4	0.16	1.5									32	600	0.11		76	5.2	0.26	2.4
	6	800	0.15	17	53	14.8	0.14	0.9									30	800	0.15		104	5.2	0.36	2.4
	32	900	0.17		118	5.2	0.41	2.4									48	900	0.17		71	8.6	0.27	1.6
	3	1,600	0.30		34	32.1	0.12	0.4									3	1,300	0.25		28	32.1	0.10	0.4
	32	1,100	0.21		145	5.2	0.50	2.4									15	600	0.11		36	10.9	0.14	1.3
	37	3,500	0.66		74	32.1	0.26	0.4									10	300	0.06		19	11.1	0.06	1.3
	87	600	0.11		42	9.4	0.16	1.5									49	800	0.15		36	15.0	0.14	0.9
	14	2,800	0.53		222	8.6	0.85	1.6									6	800	0.15		36	14.8	0.14	0.9
	10	1,800	0.34		110	11.1	0.44	1.3									28	1,400	0.27		30	32.1	0.11	0.4
	14	900	0.17		71	8.6	0.27	1.6									6	2,300	0.44		107	14.8	0.40	0.9
	82	1,900	0.36		151	8.6	0.58	1.6									89	700	0.13		50	9.4	0.20	1.5
	14	200	0.04		17	8.6	0.06	1.6									6	700	0.13		32	14.8	0.12	0.9
	10	800	0.15		49	11.1	0.20	1.3									30	1,000	0.19		132	5.2	0.46	2.4
	3	1,300	0.25		28	32.1	0.10	0.4									3	1,400	0.27	17	47	32.1	0.11	0.4
	10	4,100	0.77		250	11.1	1.00	1.3									30	1,200	0.23		159	5.2	0.55	2.4
	23	1,800	0.34		41	29.5	0.17	0.5									37	3,500	0.66		74	32.1	0.26	0.4
	3	1,000	0.19		21	32.1	0.08	0.4									87	600	0.11		42	9.4	0.16	1.5
	57	6,900	1.30		867	5.4	2.99	2.3									14	2,800	0.53		222	8.6	0.85	1.6
	32	400	0.08		55	5.2	0.19	2.4									10	1,800	0.34		110	11.1	0.44	1.3
	2	800	0.15		47	11.4	0.18	1.2									14	1,000	0.19		80	8.6	0.30	1.6
	16	600	0.11		23	17.2	0.09	0.8									82	1,900	0.36		151	8.6	0.58	1.6
	30	200	0.04		28	5.2	0.10	2.4									14	200	0.04		17	8.6	0.06	1.6
	3	700	0.13		15	32.1	0.05	0.4									15	800	0.15		50	10.9	0.20	1.3
	2	1,000	0.19		60	11.4	0.23	1.2									3	1,200	0.23		26	32.1	0.09	0.4
	3	500	0.09		10	32.1	0.04	0.4									15	2,700	0.51		168	10.9	0.66	1.3
	32	1,800	0.34	1200	1,435	5.2	2.92	2.4									10	600	0.11		36	11.1	0.14	1.3
	3	600	0.11		12	32.1	0.04	0.4									15	800	0.15		50	10.9	0.20	1.3
	2	700	0.13		41	11.4	0.16	1.2									23	1,900	0.36		44	29.5	0.18	0.5
	3	1,400	0.26		29	32.1	0.10	0.4									16	800	0.15		34	15.0	0.14	0.9

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 35 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	6	700	0.13		32	14.8	0.12	0.9									57	6,700	1.27		847	5.4	2.92	2.3
	32	600	0.11		76	5.2	0.26	2.4									30	500	0.11		76	5.2	0.26	2.4
	5	1,700	0.32		40	29.0	0.16	0.5									2	900	0.17		54	11.4	0.20	1.2
	3	1,700	0.32		36	32.1	0.13	0.4									16	500	0.09		20	15.8	0.08	0.9
	73	400	0.08		22	13.0	0.09	1.1									30	500	0.09		62	5.2	0.22	2.4
	22	900	0.17		56	11.0	0.22	1.3									3	400	0.08		9	32.1	0.03	0.4
	16	1,100	0.21		44	17.2	0.17	0.8									2	1,100	0.21		66	11.4	0.25	1.2
	3	800	0.15		17	32.1	0.06	0.4									3	400	0.08		9	32.1	0.03	0.4
	32	1,200	0.23		159	5.2	0.55	2.4									30	2,000	0.38	1200	1,463	5.2	3.01	2.4
	3	300	0.06		7	32.1	0.02	0.4									3	300	0.06		7	32.1	0.02	0.4
	10	1,500	0.28		91	11.1	0.36	1.3									2	700	0.13		41	11.4	0.16	1.2
	3	300	0.06		7	32.1	0.02	0.4									3	1,400	0.27		30	32.1	0.11	0.4
	15	500	0.09		29	11.0	0.12	1.3									6	800	0.15		36	14.8	0.14	0.9
	10	2,700	0.51		165	11.1	0.66	1.3									30	600	0.11		76	5.2	0.26	2.4
	15	3,700	0.70		229	11.0	0.91	1.3									5	2,400	0.45		56	29.0	0.22	0.5
	10	2,700	0.51		165	11.1	0.66	1.3									3	300	0.06		7	32.1	0.02	0.4
	3	2,300	0.43		48	32.1	0.17	0.4									73A	200	0.04		11	12.7	0.04	1.1
	10	600	0.11		36	11.1	0.14	1.3									3	3,700	0.70		78	32.1	0.28	0.4
	81	1,100	0.21		51	14.8	0.19	0.9									30	800	0.15		104	5.2	0.36	2.4
	69	1,500	0.28		91	11.1	0.36	1.3									3	500	0.09		10	32.1	0.04	0.4
	17	300	0.06		7	32.1	0.02	0.4									15	1,400	0.27		89	10.9	0.35	1.3
	25	3,000	0.57		139	14.8	0.51	0.9									3	300	0.06		7	32.1	0.02	0.4
	10	2,400	0.45		146	11.1	0.58	1.3									15	300	0.06		20	10.9	0.08	1.3
	6	600	0.11		27	14.8	0.10	0.9									10	700	0.13		42	11.1	0.17	1.3
	62	6,300	1.19		286	15.0	1.07	0.9									15	1,400	0.27		89	10.9	0.35	1.3
	10	900	0.17		55	11.1	0.22	1.3									10	500	0.09		29	11.1	0.12	1.3
	63	400	0.08		19	14.8	0.07	0.9									15	3,700	0.70		231	10.9	0.91	1.3
	62	900	0.17		41	15.0	0.15	0.9									10	1,300	0.25		81	11.1	0.32	1.3
	63	900	0.17		41	14.8	0.15	0.9									57	600	0.11		73	5.4	0.25	2.3
	62	1,200	0.23		55	15.0	0.21	0.9									10	1,400	0.27		88	11.1	0.35	1.3
	63	4,300	0.81		197	14.8	0.73	0.9									3	1,900	0.36		40	32.1	0.14	0.4
	31	6,200	1.17		131	32.1	0.47	0.4									15	400	0.08		26	10.9	0.10	1.3
	10	200	0.04		13	11.1	0.05	1.3									81	1,300	0.25		61	14.8	0.22	0.9
	31	500	0.09		10	32.1	0.04	0.4									69	300	0.06		19	11.1	0.08	1.3
	10	1,900	0.36		117	11.1	0.47	1.3									94	1,000	0.19		43	15.8	0.17	0.9
	31	2,300	0.43		48	32.1	0.17	0.4									17	300	0.06		7	32.1	0.02	0.4
	10	800	0.15		49	11.1	0.20	1.3									25	3,700	0.70		170	14.8	0.63	0.9
	15	2,800	0.53		173	11.0	0.69	1.3									15	900	0.17		56	10.9	0.22	1.3
	10	1,400	0.26		84	11.1	0.34	1.3									[illegible]	2,000	0.38		92	14.8	0.34	0.9
	15	5,400	1.02		334	11.0	1.33	1.3									62	4,300	0.91		218	15.0	0.82	0.9
	3	5,000	0.94		105	32.1	0.38	0.4									15	700	0.13		43	10.9	0.17	1.3
	10	1,200	0.23		75	11.1	0.30	1.3									63	500	0.09		22	14.8	0.08	0.9
	3	4,900	0.93		104	32.1	0.37	0.4									62	900	0.17		41	15.0	0.15	0.9
	21	600	0.11		36	11.1	0.14	1.3									63	1,000	0.19		46	14.8	0.17	0.9
	22	2,900	0.55		180	11.0	0.72	1.3									62	1,200	0.23		55	15.0	0.21	0.9
	21	600	0.11		36	11.1	0.14	1.3									63	4,200	0.80		195	14.8	0.72	0.9
	22	2,300	0.43		141	11.0	0.56	1.3									31	700	0.13		15	32.1	0.05	0.4
	3	2,100	0.40	17	62	32.1	0.16	0.4									63	1,200	0.23		[illegible]	14.8	0.21	0.9
	21	800	0.15		49	11.1	0.20	1.3									31	900	0.17		[illegible]	32.1	0.07	0.4
	3	5,900	1.12		126	32.1	0.45	0.4									80	400	0.08		19	15.8	0.07	0.9
	10	1,000	0.19		62	11.1	0.25	1.3									31	2,900	0.53		59	32.1	0.21	0.4
	3	100	0.02		2	32.1	0.01	0.4									80	200	0.04		9	15.8	0.04	0.9
	10	800	0.15		49	11.1	0.20	1.3									31	600	0.11		12	32.1	0.04	0.4
	3	900	0.17		19	32.1	0.07	0.4									10	1,500	0.28		91	11.1	0.36	1.3
	10	1,300	0.25		81	11.1	0.32	1.3									15	500	0.09		30	10.9	0.12	1.3

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 35 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	15	5,000	0.94		308	11.0	1.22	1.3									31	200	0.04		4	32.1	0.02	0.4
	3	600	0.11		12	32.1	0.04	0.4									10	1,300	0.25		81	11.1	0.32	1.3
	10	300	0.06		19	11.1	0.06	1.3									3	1,400	0.27		30	32.1	0.11	0.4
	3	2,300	0.43		48	32.1	0.17	0.4									16	400	0.08		18	15.8	0.07	0.9
	10	500	0.09		29	11.1	0.12	.3									15	1,600	0.30		99	10.9	0.39	1.3
	3	7,600	1.44	17	178	32.1	0.58	0.4									10	1,700	0.32		104	11.1	0.42	1.3
	10	900	0.17		55	11.1	0.22	1.3									15	5,600	1.06		350	10.9	1.38	1.3
	3	1,500	0.28		31	32.1	0.11	0.4									3	2,300	0.44		49	32.1	0.18	0.4
	69	1,500	0.28		91	11.1	0.36	1.3									10	600	0.11		36	11.1	0.14	1.3
	13	2,900	0.55		19,800	0.1	6.71	12.2									3	2,100	0.40		45	32.1	0.16	0.4
	10	400	0.08		26	11.1	0.10	1.3									15	500	0.09		30	10.9	0.12	1.3
	3	800	0.15		17	32.1	0.06	0.4									10	400	0.08		26	11.1	0.10	1.3
	10	1,900	0.36		117	11.1	0.47	1.3									15	400	0.08		26	10.9	0.10	1.3
	4	1,900	0.36		185	7.0	0.61	1.7									22	2,100	0.40		45	32.1	0.16	0.4
	14	9,600	1.81		758	8.6	2.90	1.6									28	900	0.17		19	32.1	0.07	0.4
	3	3,700	0.70	1200	1,279	32.1	2.38	0.4									3	1,900	0.36		40	32.1	0.14	0.4
	4	2,000	0.38		195	7.0	0.65	1.7									15	400	0.08		26	10.9	0.10	1.3
	3	1,400	0.26		29	32.1	0.10	0.4									22	1,600	0.30		99	10.9	0.39	1.3
	4	2,300	0.43		221	7.0	0.73	1.7									21	800	0.15		49	11.1	0.20	1.3
	5	100	0.02		2	29.0	0.01	0.5									22	600	0.11		36	10.9	0.14	1.3
	3	6,200	1.17		131	32.1	0.47	0.4									21	600	0.11		36	11.1	0.14	1.3
	4	3,100	0.59		303	7.0	1.00	1.7									22	2,500	0.47		155	10.9	0.61	1.3
	2	1,200	0.23		73	11.4	0.28	1.2									3	2,100	0.40		45	32.1	0.16	0.4
																	21	800	0.15		49	11.1	0.20	1.3
																	3	5,700	1.08	1200	1,321	32.1	2.53	0.4
																	21	1,000	0.19		62	11.1	0.25	1.3
																	3	200	0.04		4	32.1	0.02	0.4
																	10	600	0.11		36	11.1	0.14	1.3
																	3	1,000	0.19		21	32.1	0.08	0.4
																	10	1,400	0.27		88	11.1	0.35	1.3
																	15	5,000	0.95		314	10.9	1.24	1.3
																	10	500	0.09		10	32.1	0.12	1.3
																	15	300	0.06		19	11.1	[illegible]	1.3
																	3	2,300	0.44		49	32.1	0.18	0.4
																	10	500	0.09		29	11.1	0.12	1.3
																	3	8,300	1.57	17	193	32.1	0.63	0.4
																	15	600	0.11		36	10.9	0.14	1.3
																	16	200	0.04		9	15.8	0.04	0.9
																	5	1,200	0.23		76	10.9	0.30	1.3
																	13	3,200	0.61		21,960	0.1	7.44	12.2
																	15	4,000	0.76		251	10.9	0.99	1.3
																	4	900	0.17		71	8.6	0.27	1.6
																	4	400	0.08		41	7.0	0.14	1.7
																	14	7,500	1.42		594	8.6	2.27	1.6
																	4	700	0.13		67	7.0	0.22	1.7
																	14	2,100	0.40		167	8.6	0.64	1.6
																	3	2,800	0.53		59	32.1	0.21	0.4
																	16	600	0.11		25	15.8	0.10	0.9
																	4	300	0.06		31	7.0	0.10	1.7
																	3	300	0.06		7	32.1	0.02	0.4
																	1	1,300	0.25		129	7.0	0.42	1.7
																	3	1,300	0.25		28	32.1	0.10	0.4
																	1	2,600	0.49	17	269	7.0	0.83	1.7
																	5	100	0.02		2	29.0	0.01	0.5
																	3	7,100	1.34		150	32.1	0.54	0.4

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI)								Wet Season (60 or 40 RCI)								Wet Season (60 or 35 RCI)							
	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
																	7A	1,900	0.36		589	2.2	2.02	5.6
																	3	900	0.17		19	32.1	0.07	0.4
																	2	900	0.17		54	11.4	0.20	1.2
Total		242,600	45.79		35,929		59.23											241,900	45.87		38,830		60.49	
M571	2	1,700	0.32		96	12.0	0.16	0.5									2	1,600	0.30		90	12.0	0.15	0.5
	3	1,400	0.26		34	27.4	0.05	0.2									3	1,500	0.28		37	27.4	0.06	0.2
	10	4,300	0.81		295	9.9	0.49	0.6									15	4,000	0.76		282	9.7	0.46	0.6
	3	1,700	0.32		42	27.4	0.06	0.2									10	300	[illegible]		22	9.9	0.04	0.6
	10	1,200	0.23		64	9.9	0.14	0.6									3	1,700	0.32		42	27.4	0.06	0.2
	3	500	0.09		12	27.4	0.02	0.2									10	1,100	0.21		76	9.9	0.13	[illegible]
	10	800	0.15		55	9.9	0.09	0.6									3	600	0.11		14	27.4	0.02	0.2
	3	1,700	0.32		42	27.4	0.06	0.2									15	600	0.11		41	9.7	0.07	0.6
	10	2,000	0.38		138	9.9	0.23	0.6									3	1,600	0.30		39	27.4	0.06	0.2
	3	1,500	0.28		37	27.4	0.06	0.2									15	1,400	0.26		96	9.7	0.16	0.6
	10	3,000	0.57	17	224	9.9	0.34	0.6									6	1,400	0.26		167	5.6	0.29	1.1
	6	800	0.15		96	5.6	0.17	1.1									15	1,700	0.32	17	136	9.7	0.19	0.6
	10	5,300	1.00		364	9.9	0.60	0.6									6	500	0.09		58	5.6	0.10	1.1
	6	200	0.04		26	5.6	0.04	1.1									15	800	0.15		56	9.7	0.09	0.6
	10	3,600	0.68		247	9.9	0.41	0.6									6	2,500	0.47		302	5.6	0.52	1.1
	3	2,600	0.49		64	27.4	0.10	0.2									15	1,200	0.23		85	9.7	0.14	0.6
	10	2,000	0.38	1200	1,338	9.9	1.33	0.6									10	1,900	0.36		131	9.9	0.22	0.6
	3	1,000	0.19	17	42	27.4	0.04	0.2									6	800	0.15		96	5.6	0.16	1.1
	32	800	0.15	17	149	4.1	0.22	1.5									15	1,300	0.25		53	9.7	0.15	0.6
	47	1,000	0.19		167	4.1	0.28	1.5									6	1,200	0.23		148	5.6	0.25	1.1
	3	1,000	0.19		25	27.4	0.04	0.2									15	1,200	0.23		85	9.7	0.14	0.6
	47	700	0.13		114	4.1	0.20	1.5									3	2,200	0.42		55	27.4	0.08	0.2
	3	2,100	0.40		53	27.4	0.08	0.2									15	2,100	0.40	17	146	9.7	0.24	0.6
	36	2,800	0.53		193	9.9	0.32	0.6									12	1,400	0.26		234	4.0	0.39	1.5
	10	900	0.17		62	9.9	0.10	0.6									30	1,700	0.32	34	322	4.0	0.48	1.5
	6	1,900	0.36		231	5.6	0.40	1.1									3	800	0.15		20	27.4	0.03	0.2
	89	600	0.11		71	5.6	0.12	1.1									47	700	0.13		[illegible]	4.1	0.20	1.5
	6	1,200	0.23		148	5.6	0.25	1.1									3	2,200	0.42		55	27.4	0.08	0.2
	32	900	0.17	17	166	4.1	0.26	1.5									36A	1,300	0.25		93	9.7	0.15	0.6
	3	1,700	0.32		42	27.4	0.06	0.2									36	1,800	0.34		124	9.9	0.20	0.6
	32	1,000	0.19		167	4.1	0.28	1.5									15	1,100	0.21		78	9.7	0.13	0.6
	86	200	0.04		27	5.4	0.04	1.1									6	1,700	0.32		206	5.6	0.35	1.1
	37	1,400	0.26		34	27.4	.05	0.2									89	600	0.11		71	5.6	0.12	1.1
	3	800	0.15		20	27.4	0.03	0.2									6	1,200	0.23		148	5.6	0.25	1.1
	37	300	0.06		3	27.4	0.01	0.2									30	900	0.17	17	170	4.0	0.26	1.5
	83	600	0.11		71	5.6	0.12	1.1									3	1,700	0.32		42	27.4	0.06	0.2
	87	600	0.11		71	5.6	0.12	1.1									30	1,200	0.23		207	4.0	0.34	1.5
	14	5,300	1.00		643	5.6	1.10	1.1									37	3,400	0.64		84	27.4	0.13	0.2
	82	600	0.11		71	5.6	0.12	1.1									87	700	0.13		84	5.6	0.14	1.1
	14	300	0.06		39	5.6	0.07	1.1									14	2,800	0.53		341	5.6	0.58	1.1
	3	1,700	0.32		42	27.4	0.06	0.2									10	1,900	0.36		131	9.9	0.22	0.6
	10	700	0.13		47	9.9	0.08	0.6									14	400	0.08		51	5.6	0.09	1.1
	3	1,300	0.25		33	27.4	0.05	0.2									15	500	0.09		33	9.7	0.05	0.6
	10	3,700	0.70		255	9.9	0.42	0.6									82	1,900	0.36		231	5.6	0.40	1.1
	23	1,200	0.23		53	15.5	0.09	0.4									14	300	0.06		39	5.6	0.07	1.1
	2	800	0.15		20	27.4	0.03	0.2									15	700	0.13		48	9.7	[illegible]	0.6
	57	7,000	1.32		720	6.6	1.19	0.9									3	900	0.17		22	27.4	0.03	0.2
	32	500	0.09		79	4.1	0.14	1.5									15	2,200	0.42		156	9.7	0.25	0.6
	2	900	0.17		51	12.0	0.08	0.5									10	700	0.13		47	9.9	0.08	0.6
	16	500	0.09		29	11.2	0.04	0.5									15	700	0.13		48	9.7	0.08	0.6

(Continued)

Table 4 (Continued)

Vehicle	Dry Season (60 or 40 RCI)								Wet Season (60 or 40 RCI)								Wet Season (60 or 35 RCI)							
	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	30	200	0.04		36	4.0	0.06	1.5									23	1,900	0.36		84	15.5	0.14	0.4
	3	700	0.13		17	27.4	0.03	0.2									16	900	0.17		57	10.8	0.10	0.6
	2	1,100	0.21		63	12.0	0.10	0.5									57	6,900	1.30		709	6.6	1.17	0.9
	3	400	0.08		11	27.4	0.02	0.2									30	400	0.08		72	4.0	0.12	1.5
	32	1,800	0.34	1200	1,499	4.1	1.61	1.5									2	900	0.17		51	12.0	0.08	0.5
	3	600	0.11		14	27.4	0.02	0.2									16	500	0.09		30	10.8	0.05	0.6
	2	800	0.15		45	12.0	0.08	0.5									30	200	0.04		36	4.0	0.06	1.5
	3	1,900	0.36		47	27.4	0.07	0.2									3	700	0.13		17	27.4	0.03	0.2
	5	3,200	0.60		138	15.6	0.24	0.4									2	1,000	0.19		57	12.0	0.10	0.5
	3	1,700	0.32		42	27.4	0.06	0.2									3	500	0.09		12	27.4	0.02	0.2
	73	300	0.06		19	11.5	0.03	0.5									30	1,800	0.34	1200	1,506	4.0	1.61	1.5
	22	1,000	0.19		70	9.8	0.11	0.6									3	500	0.09		12	27.4	0.02	0.2
	16	1,600	0.30		96	11.2	0.15	0.5									2	800	0.15		45	12.0	0.08	0.5
	3	3,400	0.64		84	27.4	0.13	0.2									3	1,800	0.34		45	27.4	0.07	0.2
	10	1,200	0.23		84	9.9	0.14	0.6									5	3,300	0.62		143	15.6	0.25	0.4
	3	300	0.06		8	27.4	0.01	0.2									3	1,700	0.32		42	27.4	0.06	0.2
	15	600	0.11		40	9.8	0.07	0.6									73	300	0.06		19	11.5	0.03	0.5
	10	2,700	0.51		185	9.9	0.31	0.6									16	1,100	0.21		70	10.8	0.13	0.6
	15	3,300	0.62		228	9.8	0.37	0.6									22	1,600	0.30		111	9.7	0.18	0.6
	10	1,200	0.23		84	9.9	0.14	0.6									3	3,400	0.64		84	27.4	0.13	0.2
	2	1,200	0.23		69	12.0	0.12	0.5									15	1,900	0.36		134	9.7	0.22	0.6
	3	3,200	0.60		79	27.4	0.12	0.2									3	500	0.09		12	27.4	0.02	0.2
	10	400	0.08		29	9.9	0.05	0.6									15	300	0.06		22	9.7	0.04	0.6
	81	1,200	0.23		148	5.6	0.25	1.1									10	700	0.13		47	9.9	0.08	0.6
	69	1,400	0.26		95	9.9	0.16	0.6									15	1,300	0.25		93	9.7	0.15	0.6
	17	1,900	0.36		47	27.4	0.07	0.2									10	600	0.11		40	9.9	0.07	0.6
	69	1,400	0.26		95	9.9	0.16	0.6									15	3,500	0.66		245	9.7	0.40	0.6
	70	800	0.15		45	12.0	0.08	0.5									10	600	0.11		40	9.9	0.07	0.6
	69	400	0.08		29	9.9	0.05	0.6									57	600	0.11		60	6.6	0.10	0.9
	10	800	0.15		55	9.9	0.09	0.6									2	1,000	0.19		57	12.0	0.10	0.5
	6	1,000	0.19		122	5.6	0.21	1.1									16	800	0.15		50	10.8	0.09	0.6
	62	6,100	1.25		739	5.6	1.26	1.1									3	2,200	0.42		55	27.4	0.08	0.2
	6	300	0.06		39	5.6	0.07	1.1									16	500	0.09		30	10.8	0.05	0.6
	10	800	0.15		55	9.9	0.09	0.6									81	1,200	0.23		148	5.6	0.25	1.1
	63	400	0.08		51	5.6	0.09	1.1									69	500	0.09		33	9.9	0.05	0.6
	62	1,700	0.32		206	5.6	0.35	1.1									94	1,000	0.19		63	10.8	0.11	0.6
	63	3,900	0.74		476	5.6	0.81	1.1									17	1,800	0.34		45	27.4	0.07	0.2
	3	4,100	0.77		101	27.4	0.15	0.2									94	200	0.04		13	10.8	0.02	0.6
	55	1,000	0.19		69	9.9	0.11	0.6									69	500	0.09		33	9.9	0.05	0.6
	31	4,200	0.79		104	27.4	0.16	0.2									94	300	0.06		20	10.8	0.04	0.6
	10	1,900	0.36		131	9.9	0.22	0.6									69	400	0.08		29	9.9	0.05	0.6
	3	1,800	0.34		45	27.4	0.07	0.2									70	800	0.15		45	12.0	0.08	0.5
	16	500	0.09		29	11.2	0.04	0.5									69	400	0.08		29	9.9	0.05	0.6
	15	1,500	0.28		103	9.8	0.17	0.6									10	800	0.15		55	9.9	0.09	0.6
	10	1,700	0.32		116	9.9	0.19	0.6									6	1,100	0.21		135	5.6	0.23	1.1
	15	3,000	0.57		209	9.8	0.34	0.6									62	5,900	1.12		720	5.6	1.23	1.1
	3	900	0.17		22	27.4	0.03	0.2									6	400	0.08		51	5.6	0.09	1.1
	15	1,900	0.36		132	9.8	0.22	0.6									15	800	0.15		56	9.7	0.09	0.6
	3	5,300	1.00		131	27.4	0.20	0.2									63	400	0.08		51	5.6	0.09	1.1
	10	1,200	0.23		84	9.9	0.14	0.6									62	1,600	0.30		193	5.6	0.33	1.1
	3	5,000	0.94		124	27.4	0.19	0.2									63	4,100	0.77		495	5.6	0.85	1.1
	21	300	0.06		22	9.9	0.34	0.6									31	4,200	0.79		104	27.4	0.16	0.2
	22	1,700	0.32		118	9.8	0.19	0.6									80	900	0.17		57	10.8	0.10	0.6
	21	800	0.15		55	9.9	0.09	0.6									31	4,000	0.76		100	27.4	0.15	0.2
	22	500	0.09		33	9.8	0.05	0.6									15	1,000	0.19		70	9.7	0.11	0.6

(Continued)

Table 4 (Continued)

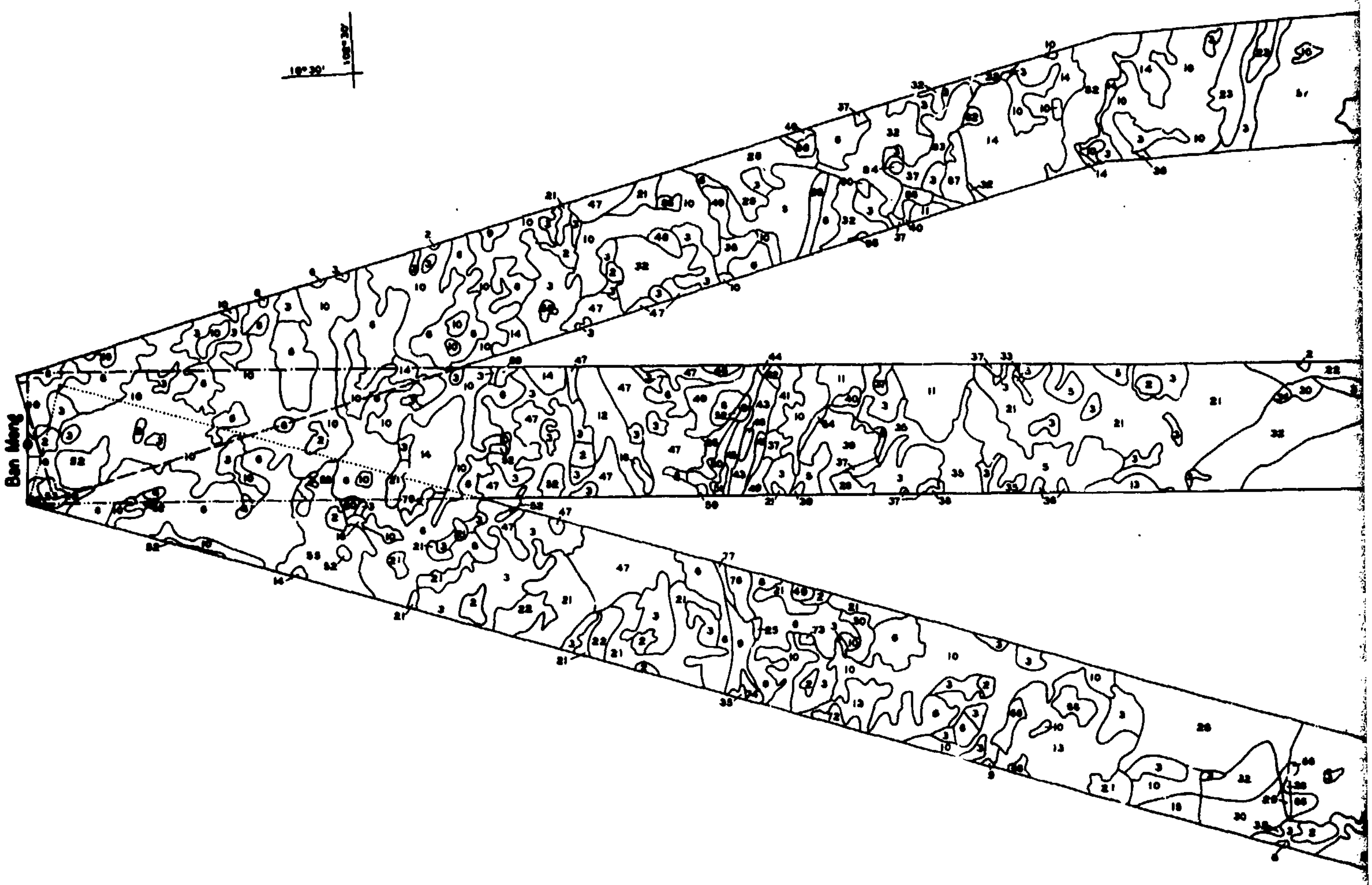
Vehicle	Dry Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 40 RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	21	600	0.11		40	9.9	0.07	0.6								
	22	2,500	0.47		173	9.8	0.28	0.6								
	3	1,600	0.30	17	56	27.4	0.06	0.2								
	21	1,300	0.25		91	9.9	0.15	0.6								
	3	8,800	1.66		218	27.4	0.33	0.2								
	10	1,200	0.23		84	9.9	0.14	0.6								
	15	5,100	0.96		353	9.8	0.58	0.6								
	3	600	0.11		14	27.4	0.02	0.2								
	10	300	0.06		22	9.9	0.04	0.6								
	3	2,300	0.43		56	27.4	0.09	0.2								
	10	300	0.06		22	9.9	0.04	0.6								
	3	7,700	1.46	17	209	27.4	0.29	0.2								
	69	1,700	0.32		116	9.9	0.19	0.6								
	13	2,900	0.55		900	2.2	1.65	3.0								
	10	400	0.08		29	9.9	0.05	0.6								
	[illegible]	800	0.15		20	27.4	0.03	0.2								
	10	1,900	0.36		131	9.9	0.22	0.6								
	4	1,900	0.36		209	6.2	0.36	1.0								
	14	6,100	1.15		739	5.6	1.26	1.1								
	4	400	0.08		46	6.2	0.08	1.0								
	14	3,000	0.57		366	5.6	0.63	1.1								
	3	3,700	0.70	17	109	27.4	0.14	0.2								
	4	2,000	0.38		221	6.2	0.38	1.0								
	3	1,400	0.26		34	27.4	0.05	0.2								
	4	2,300	0.43		250	6.2	0.43	1.0								
	5	300	0.06		14	15.6	0.02	0.4								
	3	6,000	1.13		148	27.4	0.23	0.2								
	4	2,800	0.53		308	6.2	0.53	1.0								
	3	500	0.09		12	27.4	0.02	0.2								
	2	1,000	0.19		57	12.0	0.10	0.5								

Vehicle	Wet Season (6[illegible] or 2[illegible] RCI) Terrain Type	Distance feet	Distance miles	Penalty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
	10	800	0.15		55	9.9	0.09	0.6
	3	1,500	0.28		37	27.4	0.06	0.2
	16	600	0.11		37	10.8	0.07	0.6
	15	1,400	0.26		96	9.7	0.16	0.6
	10	1,900	0.36		131	9.9	0.22	0.6
	15	3,000	0.57		212	9.7	0.34	0.6
	3	1,000	0.19		25	27.4	0.04	0.2
	15	1,900	0.36		134	9.7	0.22	0.6
	3	5,200	0.98		129	27.4	0.20	0.2
	15	400	0.08		30	9.7	0.05	0.6
	10	400	0.08		29	9.9	0.05	0.6
	15	300	0.06		22	9.7	0.04	0.6
	3	2,100	0.40		53	27.4	0.08	0.2
	28	900	0.17		22	27.4	0.03	0.2
	3	1,800	0.34		45	27.4	0.07	0.2
	21	600	0.11		40	9.9	0.07	0.6
	22	1,700	0.32		119	9.7	0.19	0.6
	21	600	0.11		40	9.9	0.07	0.6
	22	600	0.11		41	9.7	0.07	0.6
	21	600	0.11		40	9.9	0.07	0.6
	22	2,400	0.45		167	9.7	0.27	0.6
	3	1,500	0.28	1200	1,237	27.4	1.16	0.2
	21	1,400	0.26		95	9.9	0.16	0.6
	3	9,000	1.70		223	27.4	0.34	0.2
	10	1,300	0.25		91	9.9	0.15	0.6
	15	5,000	0.94		349	9.7	0.56	0.6
	3	500	0.09		12	27.4	0.02	0.2
	10	400	0.08		29	9.9	0.05	0.6
	3	2,600	0.49		64	27.4	0.10	0.2
	10	300	0.06		22	9.9	0.04	0.6
	3	8,000	1.51	17	215	27.4	0.30	0.2
	16	400	0.08		27	10.8	0.05	0.6
	3	2,400	0.45		59	27.4	0.09	0.2
	94	600	0.11		37	10.8	0.07	0.6
	69	1,200	0.23		84	9.9	0.14	0.6
	13	2,800	0.53		867	2.2	1.59	3.0
	10	600	0.11		40	9.9	0.07	0.6
	3	700	0.13		17	27.4	0.03	0.2
	15	1,900	0.36		134	9.7	0.22	0.6
	1	1,700	0.32		186	6.2	0.32	1.0
	14	3,900	0.74		476	5.6	0.81	1.1
	1	800	0.15		87	6.2	0.15	1.0
	14	2,100	0.40		257	5.6	0.44	1.1
	4	900	0.17		99	6.2	0.17	1.0
	14	2,100	0.40		257	5.6	0.44	1.1
	3	2,800	0.53		70	27.4	0.11	0.2
	16	700	0.13	17	60	10.8	0.08	0.6
	3	300	0.06		8	27.4	0.01	0.2
	1	1,900	0.36		209	6.2	0.36	1.0
	3	1,400	0.26		34	27.4	0.05	0.2

(Continued)

Table 4 (Concluded)

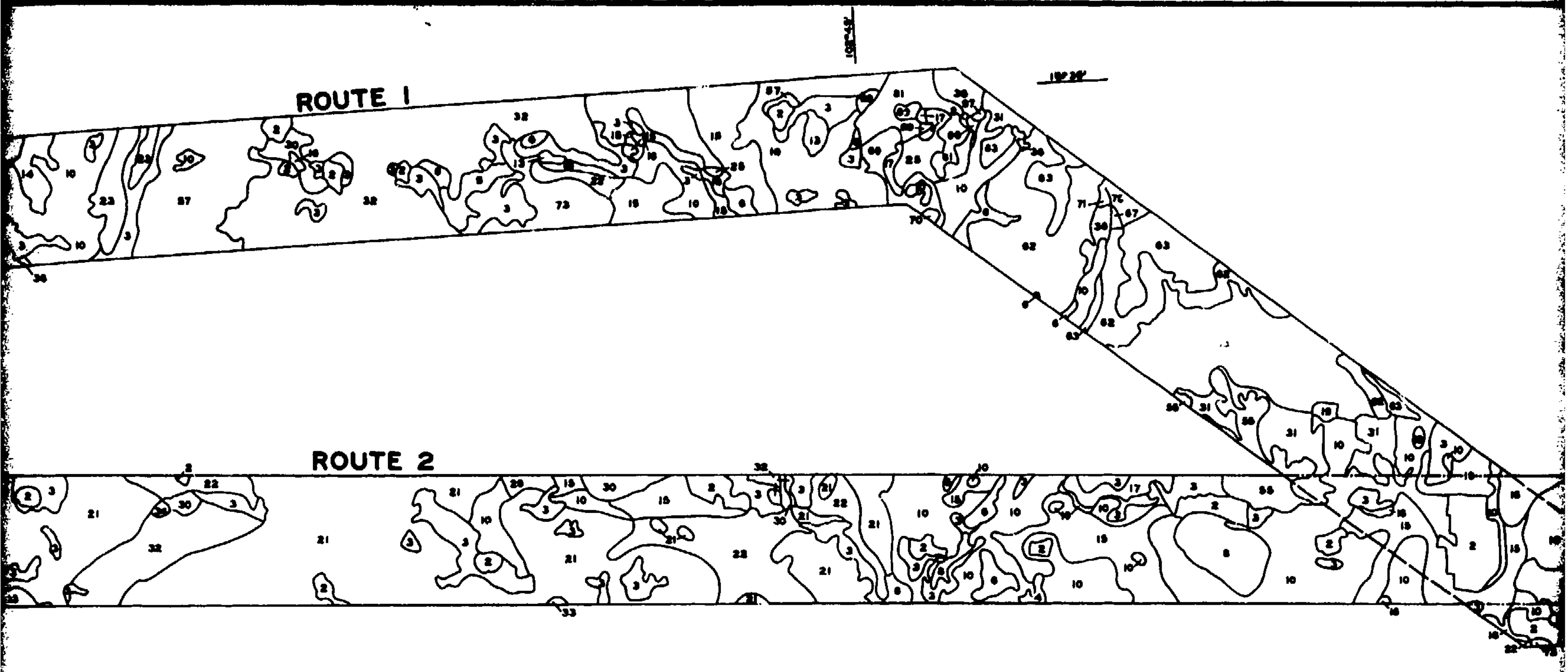
Vehi-cle	Dry Season (60 or 40 RCI) Ter-rain Type	Distance feet	Distance miles	Pen-alty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 40 RCI) Ter-rain Type	Distance feet	Distance miles	Pen-alty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile	Wet Season (60 or 35 RCI) Ter-rain Type	Distance feet	Distance miles	Pen-alty sec	Time sec	Avg Speed mph	Fuel gal	Fuel gal/mile
																	1	2,300	0.43		250	6.2	0.43	1.0
																	5	300	0.06		14	15.6	0.02	0.4
																	3	6,700	1.27		167	27.4	0.25	0.2
																	4	1,500	0.28		158	6.4	0.28	1.0
																	1	1,400	0.26		151	6.2	0.26	1.0
																	3	500	0.09		12	27.4	0.02	0.2
																	2	1,000	0.19		57	12.0	0.10	0.5
Total		243,900	46.05		19,001		29.68											248,200	46.86		19,788		31.0[illegible]	

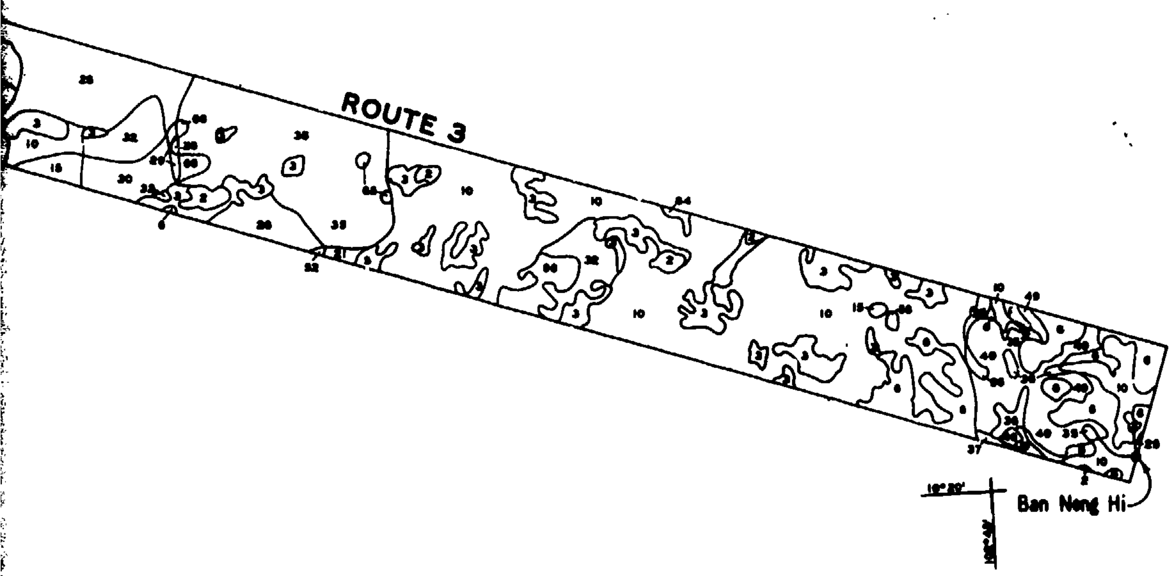


NOTE: NUMERICAL DESIGNATIONS INDICATE COMBINATIONS OF STRUCTURE GEOMETRY, SURFACE COMPOSITION, AND VEGETATION FACTORS. FOR CLASS LIMITS OF EACH FACTOR OCCURING IN A PARTICULAR TERRAIN COMBINATION. SEE TABLE I.

SEQUENCES IN WHICH FACTORS OCCUR FROM LEFT TO RIGHT IN TABULATION ARE NOT INTENDED TO INDICATE A HIERARCHY OF EFFECT ON VEHICLE PERFORMANCE.

2

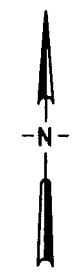




TERRAIN TYPE NO	Surface Geometry: Slope deg	Surface Geometry: Vertical Obstacle Spacing ft	Surface Geometry: 180°– Approach Angle deg	Surface Geometry: Step Height in.	Surface Composition-Vegetation Combination No.
1	0-1.5	>12-50	125-<150	>10-18	19
2	0-1.5	>150	165-<180	0-4	2
3	0-1.5	>150	165-<180	0-4	3
4	0-1.5	>12-50	125-<150	>10-18	3
5	0-1.5	>150	165-<180	0-4	6
6	0-1.5	>150	165-<180	0-4	1
7	0-1.5	>12-50	125-<150	>18-30	3
8	0-1.5	>150	165-<180	0-4	12
9	0-1.5	>150	165-<180	0-4	5
10	0-1.5	>50-150	125-<150	>10-18	3
11	0-1.5	>150	165-<180	0-4	15
12	0-1.5	>50-150	100-<125	>18-30	19
13	0-1.5	>150	165-<180	0-4	7
14	0-1.5	>150	165-<180	0-4	4
15	0-1.5	>50-150	125-<150	>10-18	19
16	0-1.5	>150	165-<180	0-4	19
17	>1.5-4.5	>150	165-<180	>4-10	3
18	0-1.5	>50-150	125-<150	>10-18	2
19	0-1.5	>50-150	125-<150	>10-18	12
20	0-1.5	>150	165-<180	0-4	18
21	0-1.5	>50-150	100-<125	>10-18	3
22	0-1.5	>50-150	100-<125	>10-18	19
23	0-1.5	>150	165-<180	0-4	9
24	0-1.5	>50-150	125-<150	>10-18	4
25	0-1.5	>50-150	125-<150	>10-18	1
26	0-1.5	>50-150	165-<180	>4-10	3
27	0-1.5	>50-150	165-<180	>4-10	19
28	0-1.5	>50-150	125-<150	>4-10	3
29	0-1.5	>50-150	125-<150	>4-10	19
30	0-1.5	>50-150	125-<150	>18-30	19
31	0-1.5	>150	165-<180	>4-10	3
32	0-1.5	>50-150	125-<150	>18-30	3
33	0-1.5	>50-150	100-<125	>10-18	6
34	0-1.5	>50-150	125-<150	>18-30	2
35	0-1.5	>50-150	100-<125	>4-10	3
36	>1.5-4.5	>50-150	125-<150	>10-18	3
37	>1.5-4.5	>150	165-<180	0-4	3
38	>1.5-4.5	>50-150	100-<125	>4-10	3
39	>1.5-4.5	>150	165-<180	0-4	6
40	>1.5-4.5	>150	165-<180	0-4	15
41	>1.5-4.5	>150	165-<180	0-4	5
42	>4.5-9	>150	125-<150	>10-18	14
43	>4.5-9	>150	125-<150	>10-18	5
44	>18-30	>150	125-<150	>10-18	14
45	>18-30	>150	125-<150	>10-18	5
46	0-1.5	>150	125-<150	>10-18	5
47	0-1.5	>50-150	100-<125	>18-30	3
48	0-1.5	>150	165-<180	0-4	13
49	>1.5-4.5	>150	165-<180	0-4	1

3

KHON KAEN CROSS-C
MOBILITY ROUT
SURFACE GEOMETRY, SURFACE
AND VEGETATION FAC



SCALE

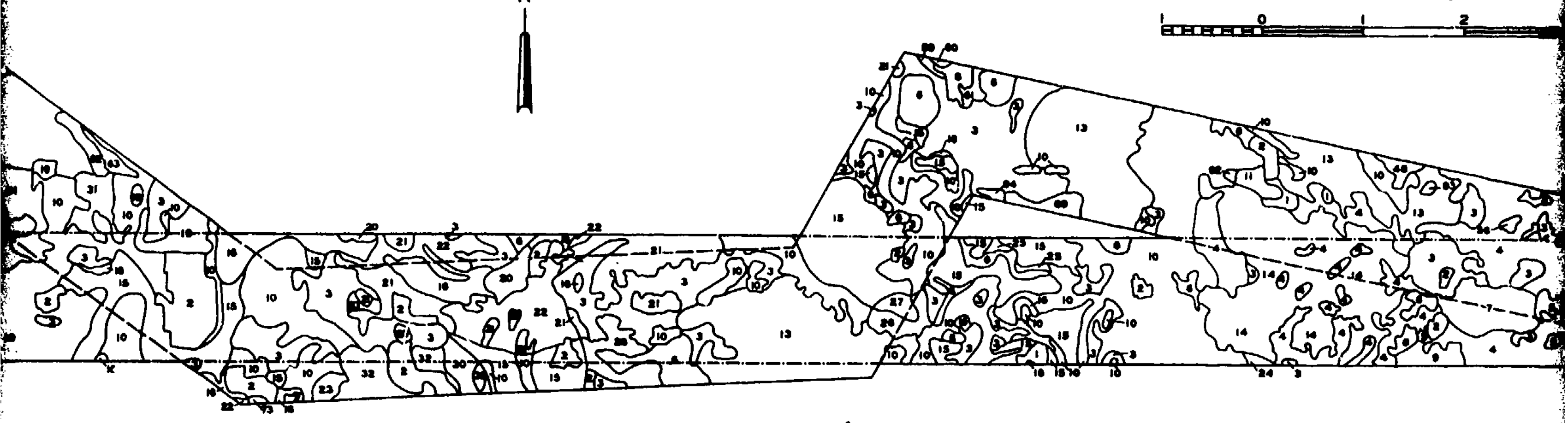


Table 1

Terrain Factor Types (Surface Geometry, Surface Composition, Vegetation Structure)

…e Geometry …ical …acle …ing ft	180° Approach Angle deg	Step Height in.	Surface Composition-Vegetation Combination No.	Surface Composition Rating Cone Index	Vegetation Structure, Spacing of Stems, ft: Stems of Diameter Equal to or Less Than 2 in.	5 in.	9 in.	50 in.	Stems of Diameter Equal to or More Than 1 in.	3 in.	6 in.	10 in.
-50	125-<150	>10-18	19	25-60	0-	-5	0-5	0-5	0-5	>30	>30	>30
50	165-<180	0-4	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
50	165-<180	0-4	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
-50	125-<150	>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
50	165-<180	0-4	6	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30	>30
50	165-<180	0-4	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
-50	125-<150	>18-30	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
50	165-<180	0-4	12	>60	>30	>30	>30	>30	>30	>30	>30	>30
50	165-<180	0-4	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
-150	125-<150	>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
80	165-<180	0-4	15	>60	>5-10	>5-10	>5-10	>5-10	-10	>5-10	>10-30	>30
-150	100-<125	>18-30	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
50	165-<180	0-4	7	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
50	165-<180	0-4	4	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
-150	125-<150	>10-18	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
50	165-<180	0-4	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
50	165-<180	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
-150	125-<150	>10-18	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
-150	125-<150	>10-18	12	>60	>30	>30	>30	>30	>30	>30	>30	>30
50	165-<180	0-4	18	25-60	>30	>30	>30	>30	>30	>30	>30	>30
-150	100-<125	>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
-150	100-<125	>10-18	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
50	165-<180	0-4	9	>60	>10-30	>10-30	>10-30	>10-30	>10-30	>10-30	>30	>30
-150	125-<150	>10-18	4	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
-150	125-<150	>10-18	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
-150	165-<180	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
-150	165-<180	>4-10	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
-150	125-<150	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
-150	125-<150	>4-10	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
-150	125-<150	>18-30	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
50	165-<180	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
-150	125-<150	>18-30	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
-150	100-<125	>10-18	6	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30	>30
-150	125-<150	>18-30	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
-150	100-<125	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
-150	125-<150	>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
50	165-<180	0-4	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
-150	100-<125	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
50	165-<180	0-4	6	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30	>30
50	165-<180	0-4	15	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30
50	165-<180	0-4	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
50	125-<150	>10-18	14	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
50	125-<150	>10-18	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
50	125-<150	>10-18	14	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
50	125-<150	>10-18	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
50	125-<150	>10-18	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
-150	100-<125	>18-30	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
50	165-<180	0-4	13	>60	0-5	0-5	0-5	0-5	0-5	>5-10	>30	>30
50	165-<180	0-4	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30

Terrain Type No	Surface Geometry: Slope deg	Vertical Obstacle Spacing ft	180° Approach Angle deg	Step Height in.	Surface Composition-Vegetation Combination No.	Surface Composition Rating Cone Index	Vegetation Spacing of…: Stems of Diameter Equal to or Less Than 2 in.	5 in.	9 in.	50 in.
50	>1.5-4.5	>150	125-<150	0-4	1	>60	0-5	0-5	0-5	0-5
51	>4.5-9	>150	165-<180	0-4	1	>60	0-5	0-5	0-5	0-5
52	0-1.5	>50-150	165-<180	0-4	2	>60	0-5	0-5	0-5	0-5
53	0-1.5	>50-150	165-<180	0-4	2	>60	>30	>30	>10-30	>10-30
54	0-1.5	>50-150	125-<150	>10-18	6	>60	>5-10	>5-10	>5-10	>5-10
55	0-1.5	>50-150	150-<165	>10-18	2	>60	0-5	0-5	0-5	0-5
56	0-1.5	>50-150	125-<150	>10-18	1	>60	0-5	0-5	0-5	0-5
57	0-1.5	>150	165-<180	0-4	17	>60	>5-10	>5-10	>5-10	>5-10
58	0-1.5	>150	165-<180	0-4	11	>60	>30	>10-30	>10-30	>10-30
59	0-1.5	>12-50	125-<150	>30-48	3	>60	0-5	0-5	0-5	0-5
60	>4.5-9	>150	165-<180	0-4	3	>60	0-5	0-5	0-5	0-5
61	>1.5-4.5	>50-150	165-<180	0-4	3	>60	0-5	0-5	0-5	0-5
62	>1.5-4.5	>150	165-<180	>4-10	1	>60	0-5	0-5	0-5	0-5
63	0-1.5	>150	165-<180	>4-10	1	>60	0-5	0-5	0-5	0-5
64	0-1.5	>50-150	165-<180	0-4	9	>60	>10-30	>10-30	>10-30	>10-30
65	0-1.5	>50-150	100-<125	>4-10	2	>60	>30	>30	>10-30	>10-30
66	0-1.5	>50-150	100-<125	>4-10	19	25-60	0-5	0-5	0-5	0-5
67	>1.5-4.5	>150	165-<180	>4-10	4	>60	>5-10	0-5	0-5	0-5
68	>1.5-4.5	>150	165-<180	0-4	7	>60	0-5	0-5	0-5	0-5
69	0-1.5	>50-150	165-<180	>10-18	3	>60	0-5	0-5	0-5	0-5
70	0-1.5	>50-150	165-<180	>10-18	2	>60	>30	>30	>10-30	>10-30
71	>1.5-4.5	>50-150	125-<150	>10-18	2	>60	>30	>30	>10-30	>10-30
72	>1.5-4.5	>150	125-<150	0-4	7	>60	0-5	0-5	0-5	0-5
73	0-1.5	>150	125-<150	>10-18	3	>60	0-5	0-5	0-5	0-5
74	0-1.5	>7-12	165-<180	0-4	5	>60	>5-10	0-5	0-5	0-5
75	0-1.5	>12-50	165-<180	0-4	5	>60	>5-10	0-5	0-5	0-5
76	>1.5-4.5	>150	125-<150	>10-18	5	>60	>5-10	0-5	0-5	0-5
77	>4.5-9	>150	125-<150	0-4	5	>60	>5-10	0-5	0-5	0-5
78	0-1.5	>150	165-<180	>4-10	4	>60	>5-10	0-5	0-5	0-5
79	0-1.5	>50-150	100-<125	>10-18	1	>60	0-5	0-5	0-5	0-5
80	0-1.5	>50-150	150-<165	>10-18	19	25-60	0-5	0-5	0-5	0-5
81	0-1.5	>50-150	165-<180	>10-18	1	>60	0-5	0-5	0-5	0-5
82	>1.5-4.5	>150	165-<180	0-4	4	>60	>5-10	0-5	0-5	0-5
83	>1.5-4.5	>150	165-<180	0-4	16	>60	0-5	0-5	0-5	0-5
84	>1.5-4.5	>150	165-<180	0-4	10	>60	>30	>30	>10-30	>10-30
85	0-1.5	>150	165-<180	>10-18	11	>60	>30	>10-30	>10-30	>10-30
86	>1.5-4.5	>50-150	125-<150	>18-30	3	>60	0-5	0-5	0-5	0-5
87	0-1.5	>150	165-<180	0-4	16	>60	0-5	0-5	0-5	0-5
88	>1.5-4.5	>50-150	125-<150	>4-10	3	>60	0-5	0-5	0-5	0-5
89	0-1.5	>150	165-<180	0-4	14	>60	>5-10	0-5	0-5	0-5
90	0-1.5	>50-150	125-<150	>18-30	10	>60	>30	>30	>10-30	>10-30
91	>1.5-4.5	>150	165-<180	0-4	19	25-60	0-5	0-5	0-5	0-5
92	>1.5-4.5	>150	165-<180	0-4	18	25-60	>30	>30	>30	>30
93	0-1.5	>12-50	125-<150	>10-18	7	>60	0-5	0-5	0-5	0-5
94	0-1.5	>50-150	165-<180	>10-18	19	25-60	0-5	0-5	0-5	0-5
95	0-1.5	>50-150	165-<180	0-4	15	>60	>5-10	>5-10	>5-10	>5-10
96	>1.5-4.5	>50-150	165-<180	>10-18	3	>60	0-5	0-5	0-5	0-5
97	>1.5-4.5	>150	125-<150	>4-10	3	>60	0-5	0-5	0-5	0-5
98	0-1.5	>150	165-<180	0-4	8	>60	>10-30	>10-30	>10-30	>10-30

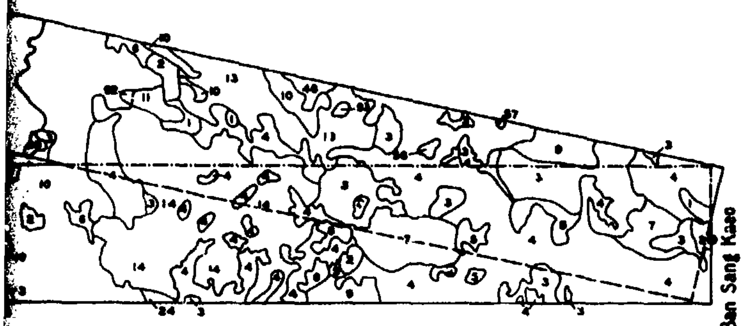
7

KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

SURFACE GEOMETRY, SURFACE COMPOSITION AND VEGETATION FACTORS

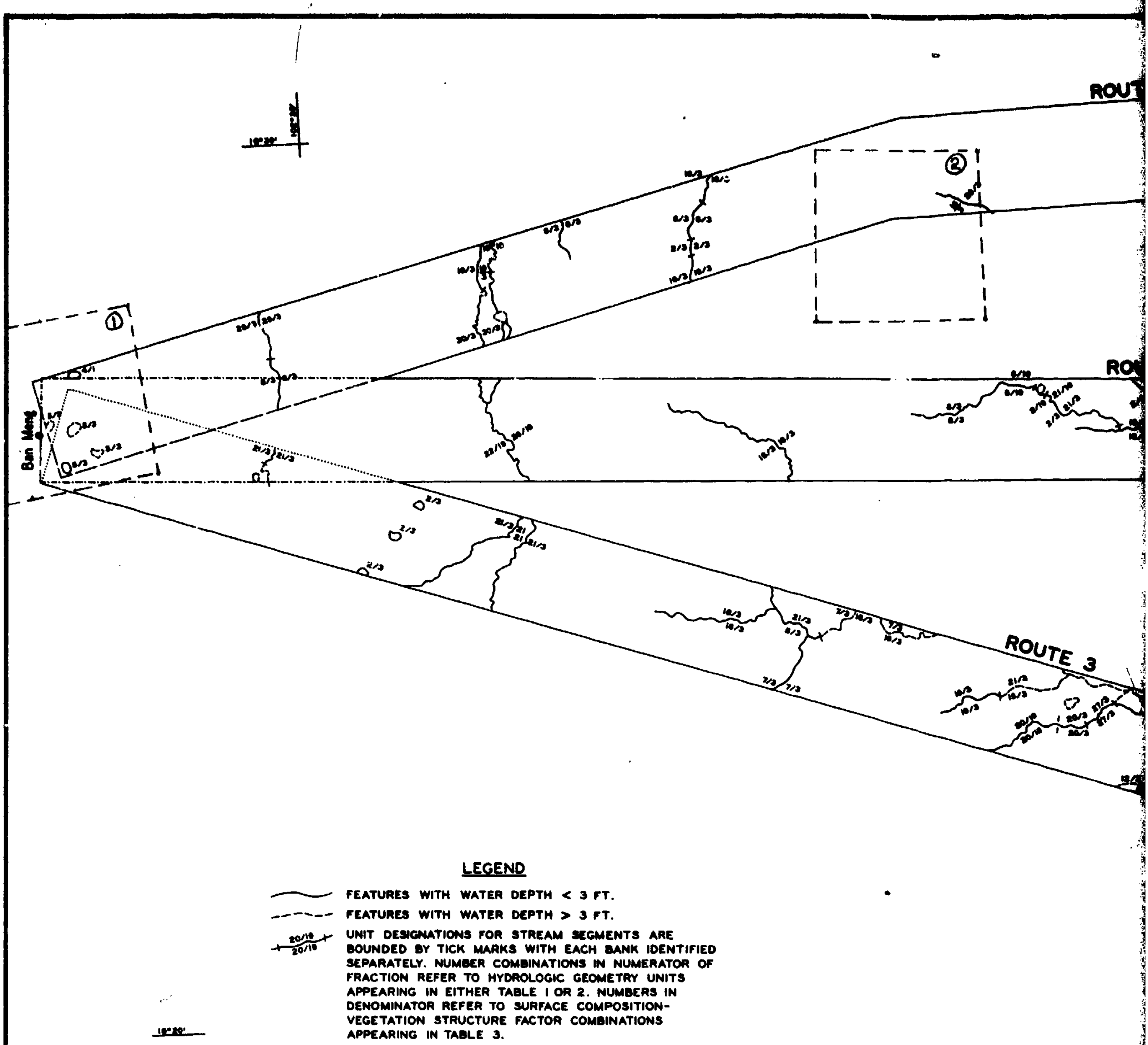
SCALE

1 0 1 2 3 4 MILES



Step Height in.	Surface Composition-Vegetation Combination No.	Surface Composition Rating Cone Index	Vegetation Structure, Spacing of Stems, ft: Stems of Diameter Equal to or Less Than 2 in.	5 in.	9 in.	50 in.	Stems of Diameter Equal to or More Than 1 in.	3 in.	6 in.	10 in.
0-4	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
0-4	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
0-4	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
0-4	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
>10-18	6	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30	>30
>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>10-18	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
0-4	17	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>10-30	>30
0-4	11	>60	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30	>30
>30-48	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
0-4	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
0-4	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>4-10	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
>4-10	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
0-4	[illegible]	>60	>10-30	>10-30	>10-30	>10-30	>10-30	>10-30	>30	>30
>4-10	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
>4-10	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>4-10	4	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
0-4	7	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>10-18	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
>10-18	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
0-4	7	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
0-4	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
0-4	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
>10-18	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
0-4	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
>4-10	4	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
>10-18	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
>10-18	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>10-18	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
0-4	4	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
0-4	16	>60	0-5	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
0-4	10	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>30	>30
>10-18	11	>60	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30	>30
>18-30	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
0-4	16	>60	0-5	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
0-4	14	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
>18-30	10	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>30	>30
0-4	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
0-4	18	25-60	>30	>30	>30	>30	>30	>30	>30	>30
>10-18	7	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
>10-18	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
0-4	15	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30
>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
0-4	8	>60	>10-30	>10-30	>10-30	>10-30	>10-30	>10-30	>10-30	>30

Plate 1



Dashed line areas ① through ⑥ indicate aerial photographic coverage shown in figs. 2-7.

2

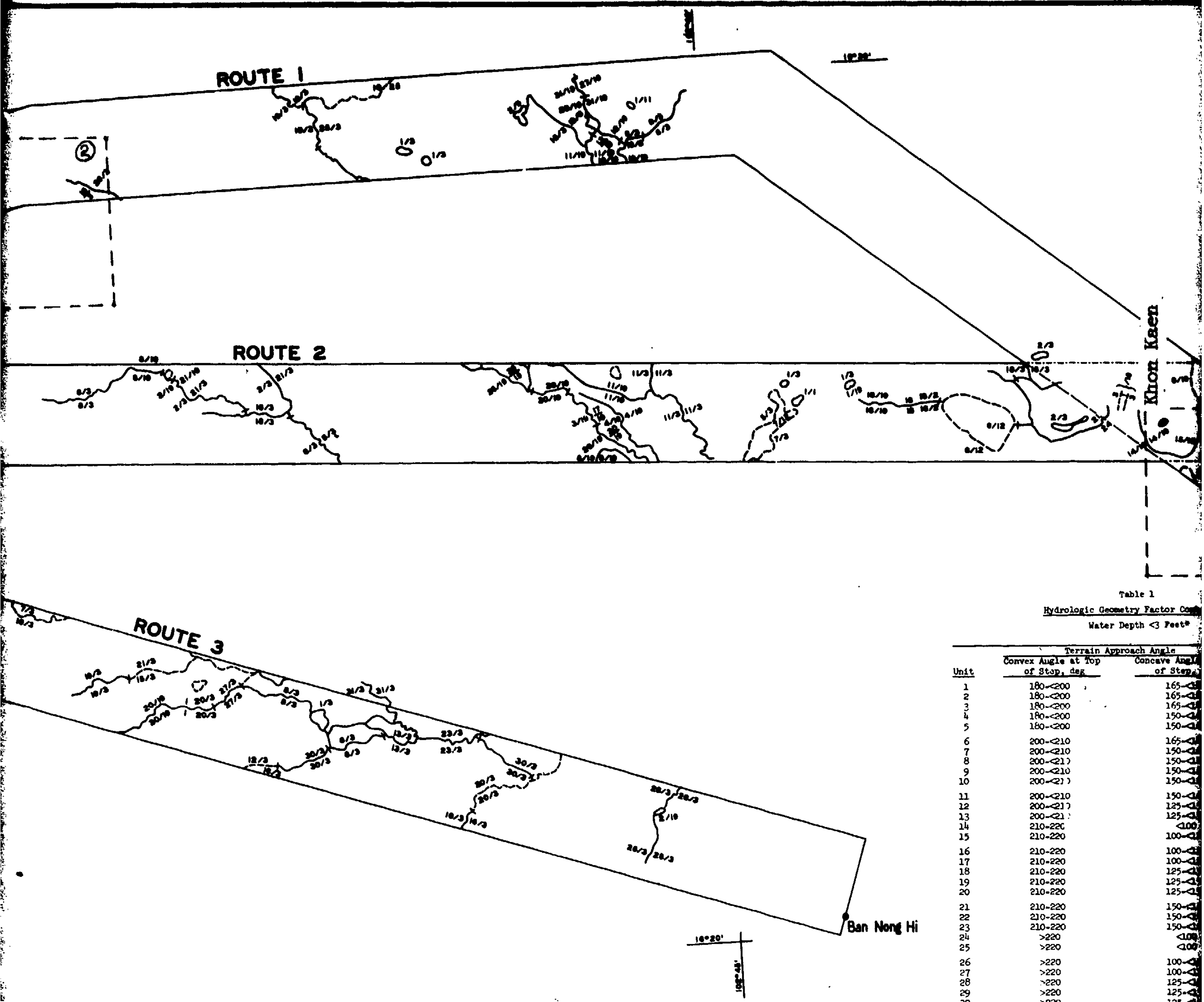


Table 1

Hydrologic Geometry Factor Co

Water Depth <3 Feet*

Unit	Terrain Approach Angle: Convex Angle at Top of Stop, deg	Terrain Approach Angle: Concave Angl of Step
1	180-<200	165-<
2	180-<200	165-<
3	180-<200	165-<
4	180-<200	150-<
5	180-<200	150-<
6	200-<210	165-<
7	200-<210	150-<
8	200-<210	150-<
9	200-<210	150-<
10	200-<210	150-<
11	200-<210	150-<
12	200-<210	125-<
13	200-<210	125-<
14	210-220	<100
15	210-220	100-<
16	210-220	100-<
17	210-220	100-<
18	210-220	125-<
19	210-220	125-<
20	210-220	125-<
21	210-220	150-<
22	210-220	150-<
23	210-220	150-<
24	>220	<100
25	>220	<100
26	>220	100-<
27	>220	100-<
28	>220	125-<
29	>220	125-<
30	>220	125-<
31	>220	125-<
32	>220	125-<

* Hydrologic features <3 ft are described usi
fication.

3

KHON KAEN CRO
MOBILITY R
HYDROLOGIC GEOMETRY, SU
AND VEGETATION

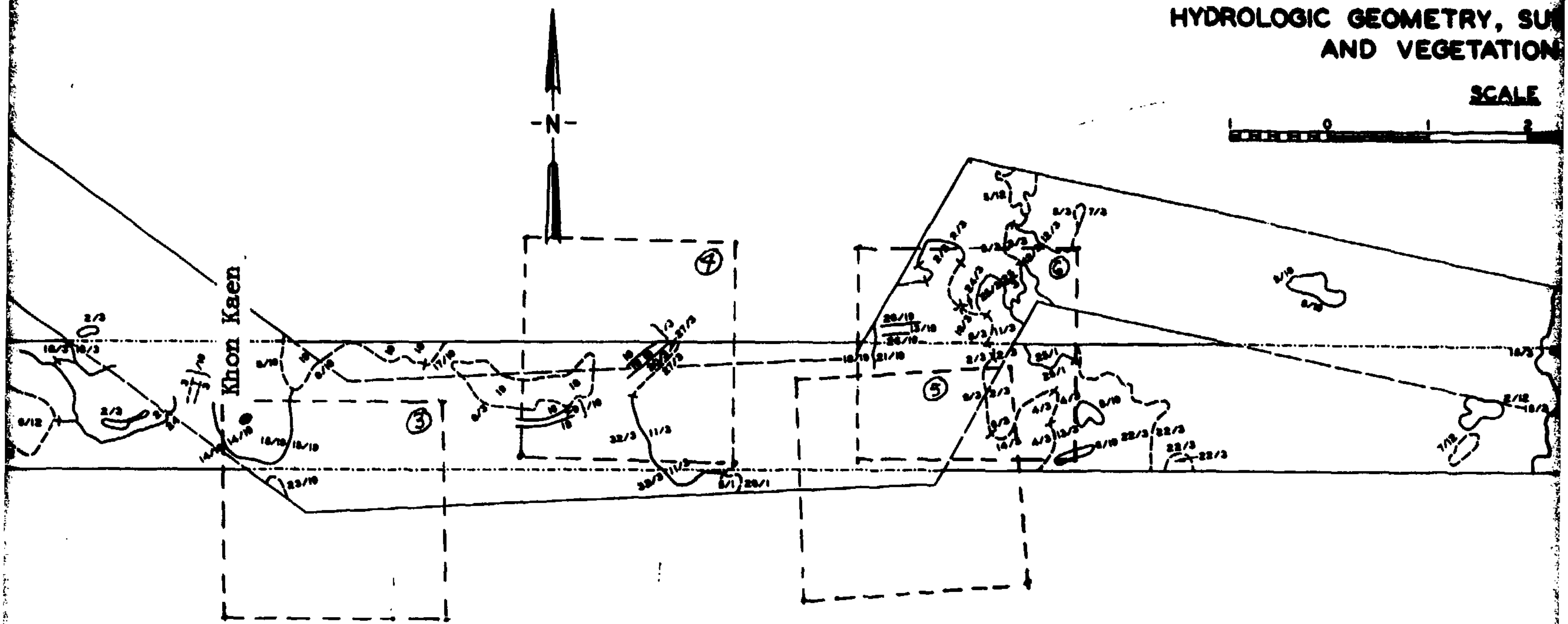


Table 1

Hydrologic Geometry Factor Combinations

Water Depth <3 Feet*

Terrain Approach Angle: Convex Angle at Top of Step, deg	Terrain Approach Angle: Concave Angle at Base of Step, deg	Step Height in.
180-<200	165-<180	>18-30
180-<200	165-<180	>30-48
180-<200	165-<180	>66-84
180-<200	150-<165	>18-30
180-<200	150-<165	>30-48
200-<210	165-<180	>18-30
200-<210	150-<165	>18-30
200-<210	150-<165	>30-48
200-<210	150-<165	>48-66
200-<210	150-<165	>66-84
200-<210	150-<165	>84
200-<210	125-<150	>30-48
200-<210	125-<150	>48-66
210-220	<100	>30-48
210-220	100-<125	>30-48
210-220	100-<125	>48-66
210-220	100-<125	>66-84
210-220	125-<150	>30-48
210-220	125-<150	>48-66
210-220	125-<150	>66-84
210-220	150-<165	>30-48
210-220	150-<165	>48-66
210-220	150-<165	>66-84
>220	<100	>30-48
>220	<100	>84
>220	100-<125	>48-66
>220	100-<125	>66-84
>220	125-<150	>18-30
>220	125-<150	>30-48
>220	125-<150	>48-66
>220	125-<150	>66-84
>220	125-<150	>84

*Hydrologic features <3 ft are described using surface geometry classification.

Table 2

Hydrologic Geometry Factor Combinations

Water Depth >3 Feet

Unit	Contact Approach Angle, deg	Step Height in.	Position of Step Base (Inches Above Water Level or Below Water Level)	Water Depth ft
1	<145	--	--	3-4.5
2	<145	--	--	>4.5
3	145-155	--	--	3-4.5
4	145-155	--	--	>4.5
5	>155-165	--	--	3-4.5
6	>155-165	--	--	>4.5
7	>165-180	--	--	3-4.5
8	>165-180	--	--	>4.5
9	145-155	24-<36	1-<18 bwl*	>4.5
10	145-155	24-<36	At water level	3-4.5
11	145-155	24-<36	1-12 awl**	>4.5
12	145-155	24-<36	>12-30 awl	3-4.5
13	145-155	36-48	>12-30 awl	>4.5
14	145-155	>48	>48 awl	>4.5
15	>155-165	12-<24	1-<18 bwl	3-4.5
16	>155-165	12-<24	>30-48 awl	3-4.5
17	>155-165	24-<36	1-<18 bwl	>4.5
18	>155-165	24-<36	1-12 awl	3-4.5
19	>155-165	36-48	36-<48 bwl	>4.5
20	>155-165	36-48	At water level	3-4.5
21	>165-180	12-<24	1-<18 bwl	3-4.5
22	>165-180	12-<24	At water level	3-4.5
23	>165-180	12-<24	1-12 awl	>4.5
24	>165-180	24-<36	36-<48 bwl	>4.5
25	>165-180	24-<36	1-<18 bwl	3-4.5
26	>165-180	36-48	1-<18 bwl	3-4.5
27	>165-180	36-48	At water level	3-4.5

* Below water level.
** Above water level.

Table 3

Surface Composition-Vegetation Structure Factor Co

Combination No.	Surface Composition RCI	Vegetation Stru… Spacing of Stems: Stems of Diameter Equal To or Less Than [illegible] in.	5 in.	9 in.	50 in.	St… 1 [illegible]
1	25-60	0-5	0-5	0-5	0-5	[illegible]
2	25-60	>30	>30	>30	>30	[illegible]
3	>60	0-5	0-5	0-5	0-5	[illegible]
4	>60	0-5	0-5	0-5	0-5	[illegible]
5	>60	0-5	0-5	0-5	0-5	[illegible]
6	>60	0-5	0-5	0-5	0-5	[illegible]
7	>60	0-5	0-5	0-5	0-5	[illegible]
8	>60	>5-10	0-5	0-5	0-5	[illegible]
9	>60	>5-10	0-5	0-5	0-5	[illegible]
10	>60	>5-10	0-5	0-5	0-5	[illegible]
11	>60	>5-10	>5-10	>5-10	>5-10	[illegible]
12	>60	>5-10	>5-10	>5-10	>5-10	[illegible]
13	>60	>5-10	>5-10	>5-10	>5-10	[illegible]
14	>60	>10-30	>10-30	>10-30	>10-30	[illegible]
15	>60	>10-30	>10-30	>10-30	>10-30	[illegible]
16	>60	>30	>10-30	>10-30	>10-30	[illegible]
17	>60	>30	>30	>10-30	>10-30	[illegible]
18	>60	>30	>30	>10-30	>10-30	[illegible]
19	>60	>30	>30	>30	>30	[illegible]

4

KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

HYDROLOGIC GEOMETRY, SURFACE COMPOSITION AND VEGETATION FACTORS

SCALE

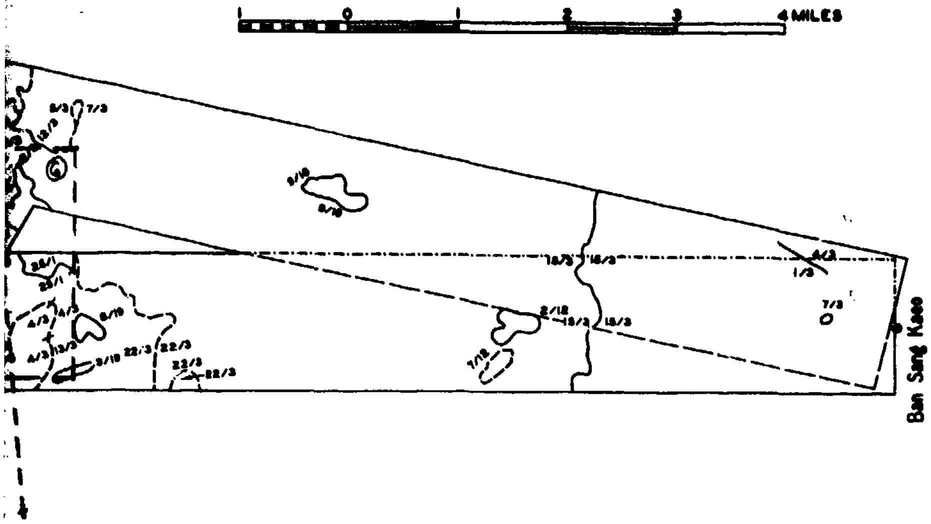
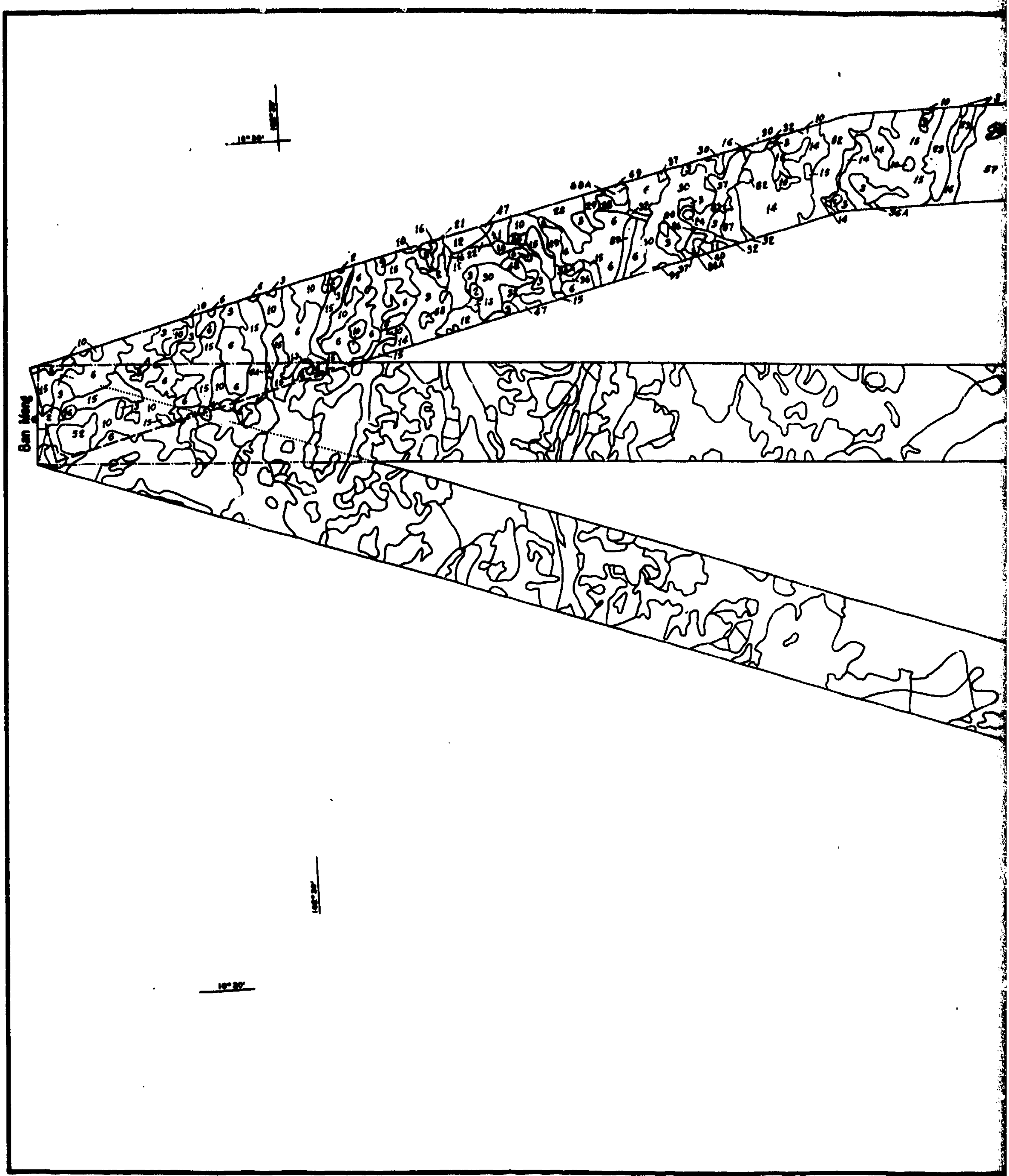


Table 3

Surface Composition-Vegetation Structure Factor Combinations

Combination No.	Surface Composition RCI	Vegetation Structure, Spacing of Stems, ft: Stems of Diameter Equal To or Less Than 2 in.	5 in.	9 in.	50 in.	Stems of Diameter Equal To or More Than 1 in.	3 in.	6 in.	10 in.
1	[illegible]	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
2		>30	>30	>30	>30	>30	>30	>30	>30
3		0-5	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
4		0-5	0-5	0-5	0-5	0-5	>5-10	>30	>30
5	[illegible]	0-5	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
6	[illegible]	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
7	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
8	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
9	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
10	>60	[illegible]10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
11	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30
12	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>10-30	>30
13	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30	>30
14	>60	[illegible]-30	>10-30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
15	>60	[illegible]-30	>10-30	>10-30	>10-30	>10-30	>10-30	>30	>30
16	>60	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30	>30
17	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
18	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>30	>30
19	>60	>30	>30	>30	>30	>30	>30	>30	>30

Plate 2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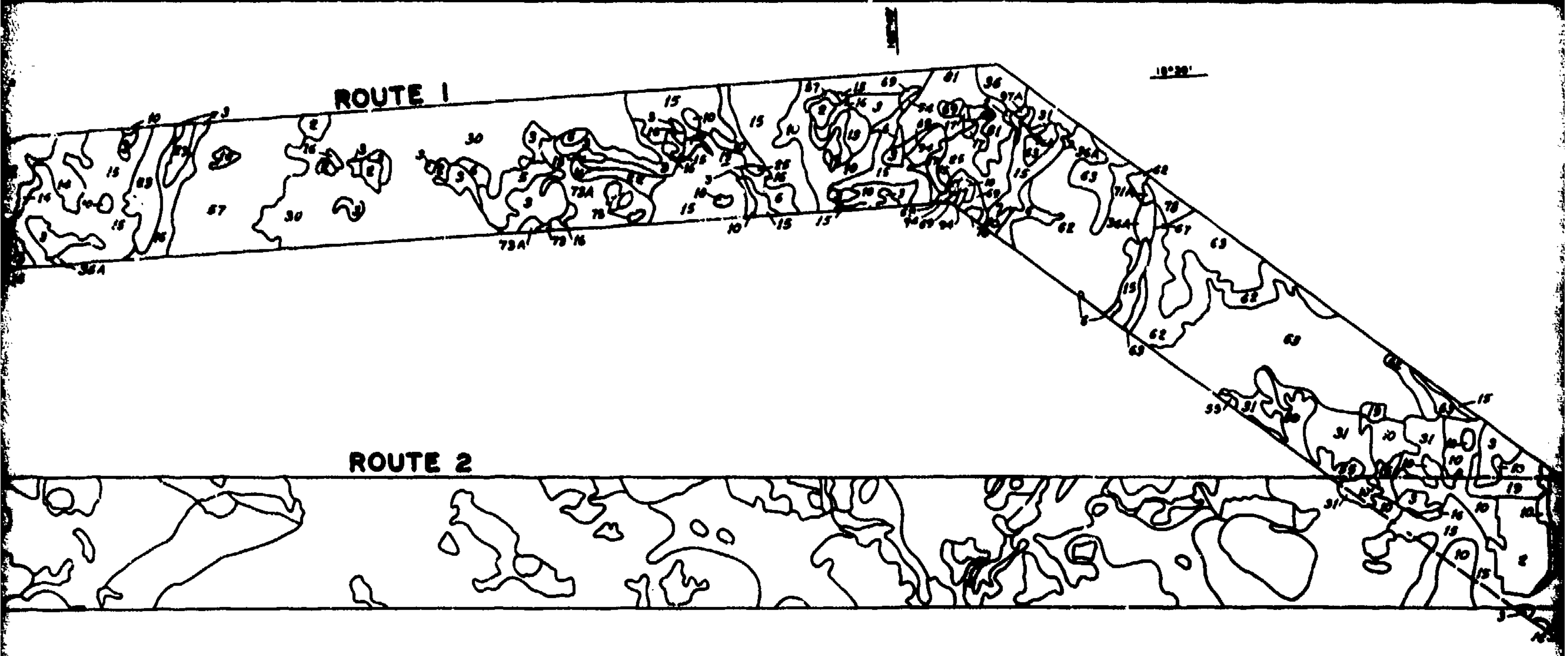
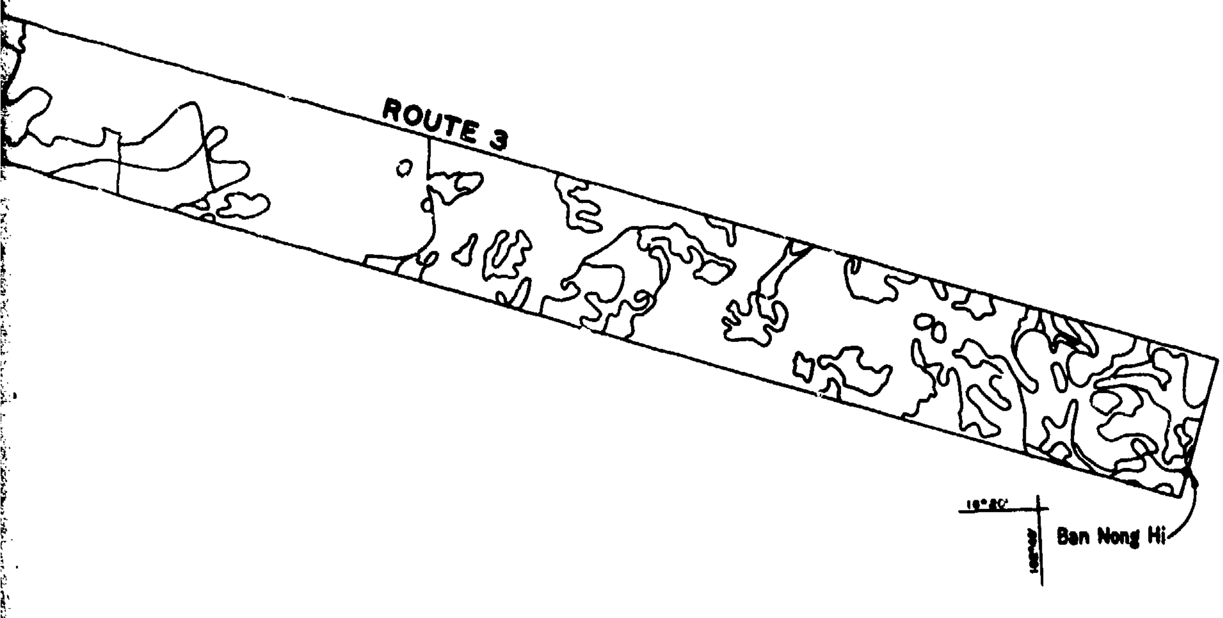




Terrain Type No.	Surface Geometry: Slope deg	Surface Geometry: Vertical Obstacle Spacing ft	Surface Geometry: 180°- Approach Angle deg	Step Height in.	Surf… Composi… Vegeta… Combi… No.
1	0-1.5	>12-50	125-<150	>10-18	19
2	0-1.5	>150	165-<180	0-4	8
3	0-1.5	>150	165-<180	0-4	3
4	0-1.5	>12-50	125-<150	>10-18	3
5	0-1.5	>150	165-<180	0-4	6
6	0-1.5	>150	165-<180	0-4	1
6A	0-1.5	>150	165-<180	0-4	20
7	0-1.5	>12-50	125-<150	>18-30	3
7A	0-1.5	>12-50	125-<150	>18-30	19
8	0-1.5	>150	165-<180	0-4	18
9	0-1.5	>150	165-<180	0-4	5
10	0-1.5	>50-150	125-<150	>10-18	3
11	0-1.5	>150	165-<180	0-4	13
12	0-1.5	>50-150	100-<125	>18-30	19
13	0-1.5	>150	165-<180	0-4	7
14	0-1.5	>150	165-<180	0-4	[illegible]
14A	0-1.5	>150	165-<180	0-4	21
15	0-1.5	>50-150	125-<150	>10-18	19
16	0-1.5	>150	165-<180	0-4	19
17	>1.5-4.5	>150	165-<180	>4-10	3
18	0-1.5	>50-150	125-<150	>10-18	8
19	0-1.5	>50-150	125-<150	>10-18	12
20	0-1.5	>150	165-<180	0-4	18
21	0-1.5	>50-150	100-<125	>10-18	3
22	0-1.5	>50-150	100-<125	>10-18	19
23	0-1.5	>150	165-<180	0-4	2
24	0-1.5	>50-150	125-<150	>10-18	4
25	0-1.5	>50-150	125-<150	>10-18	1
26	0-1.5	>50-150	165-<180	>4-10	3
27	0-1.5	>50-150	165-<180	>4-10	19
28	0-1.5	>50-150	125-<150	>4-10	3
29	0-1.5	>50-150	125-<150	>4-10	19
30	0-1.5	>50-150	125-<150	>18-30	19
31	0-1.5	>150	165-<180	>4-10	3
32	0-1.5	>50-150	125-<150	>18-30	3
33	0-1.5	>50-150	100-<125	>10-18	6
34	0-1.5	>50-150	125-<150	>18-30	2
35	0-1.5	>50-150	100-<125	>4-10	3
36	>1.5-4.5	>50-150	125-<150	>10-18	3
36A	>1.5-4.5	>50-150	125-<150	>10-18	19
37	>1.5-4.5	>150	165-<180	0-4	3
38	>1.5-4.5	>50-150	100-<125	>4-10	3
39	>1.5-4.5	>150	165-<180	0-4	6
40	>1.5-4.5	>150	165-<180	0-4	13
41	>1.5-4.5	>150	165-<180	0-4	5
42	>4.5-9	>150	125-<150	>10-18	14
43	>4.5-9	>150	125-<150	>10-18	5
44	>18-30	>150	125-<150	>10-18	14
45	>18-30	>150	125-<150	>10-18	5
46	0-1.5	>150	125-<150	>10-18	5
47	0-1.5	>50-150	100-<125	>18-30	3
48	0-1.5	>150	165-<180	0-4	13
49	>1.5-4.5	>150	165-<180	0-4	1
50	>1.5-4.5	>150	125-<150	0-4	1
51	>4.5-9	>150	165-<180	0-4	1

3

KHON KAEN CR
MOBILITY
Wet Season Areal

SCAL

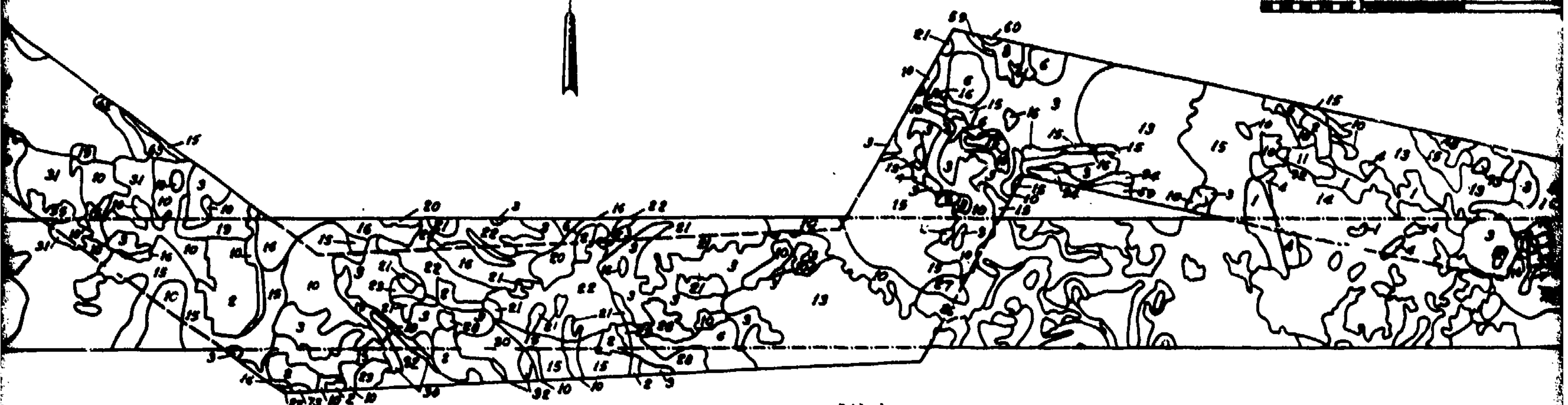


Table 1

Terrain Factor Types (Surface Geometry, Surface Composition, Vegetation Structure)

Surface Geometry: Vertical Obstacle Spacing ft	180°-Approach Angle deg	Step Height in.	Surface Composition-Vegetation Combination No.	Surface Composition Rating Cone Index	Vegetation Structure, Spacing of Stems, ft: Stems of Diameter Equal to or Less Than 2 in.	5 in.	9 in.	50 in.	Stems of Diameter Equal to or More Than 1 in.	3 in.	6 in.	10 in.
>12-50	125-<150	>10-18	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>150	165-<180	0-4	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
>150	165-<180	0-4	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>12-50	125-<150	>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>150	165-<180	0-4	6	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30	>30
>150	165-<180	0-4	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
>150	165-<180	0-4	20	25-60	0-5	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
>12-50	125-<150	>18-30	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>12-50	125-<150	>18-30	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>150	165-<180	0-4	12	>60	>30	>30	>30	>30	>30	>30	>30	>30
>150	165-<180	0-4	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
>50-150	125-<150	>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>150	165-<180	0-4	15	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30
>50-150	100-<125	>18-30	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>150	165-<180	0-4	7	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
>150	165-<180	0-4	4	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
>150	165-<180	0-4	21	25-60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
>50-150	125-<150	>10-18	[illegible]	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>150	165-<180	0-4	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>150	165-<180	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>50-150	125-<150	>10-18	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
>50-150	125-<150	>10-18	12	>60	>30	>30	>30	>30	>30	>30	>30	>30
>150	165-<180	0-4	18	25-60	>30	>30	>30	>30	>30	>30	>30	>30
>50-150	100-<125	>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>50-150	100-<125	>10-18	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>150	165-<180	0-4	9	>60	>10-30	>10-30	>10-30	>10-30	>10-30	>10-30	>30	>30
>50-150	125-<150	>10-18	4	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
>50-150	125-<150	>10-18	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
>50-150	165-<180	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>50-150	165-<180	>4-10	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>50-150	125-<150	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>50-150	125-<150	>4-10	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>50-150	125-<150	>18-30	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>150	165-<180	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>50-150	125-<150	>18-30	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>50-150	100-<125	>10-18	6	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30	>30
>50-150	125-<150	>18-30	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
>50-150	100-<125	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>50-150	125-<150	>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>50-150	125-<150	>10-18	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>10-30	>30
>150	165-<180	0-4	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>50-150	100-<125	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>150	165-<180	0-4	6	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30	>30
>150	165-<180	0-4	15	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30
>150	165-<180	0-4	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
>150	125-<150	>10-18	14	>6	>5-10	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
>150	125-<150	>10-18	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
>150	125-<150	>10-18	14	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
>150	125-<150	>10-18	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
>150	125-<150	>10-18	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
>50-150	100-<125	>18-30	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
>150	165-<180	0-4	13	>60	0-5	0-5	0-5	0-5	0-5	>5-10	>30	>30
>150	165-<180	0-4	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
>150	125-<150	0-4	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
>150	165-<180	0-4	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30

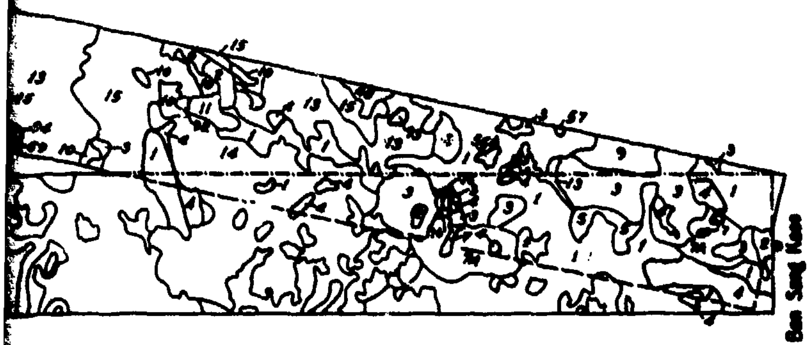
Terrain Type No.	Surface Geometry: Slope deg	Vertical Obstacle Spacing ft	180°-Approach Angle deg	Step Height in.	Surface Composition-Vegetation Combination No.	Surface Composition Rating Cone Index	Stems of Diameter Equal to or Less Than 2 in.	5 in.	9 in.
52	0-1.5	>50-150	165-<180	0-4	3	>60	0-5	0-5	0-5
53	0-1.5	>50-150	165-<180	0-4	2	>60	>30	>30	>10-30
54	0-1.5	>50-150	125-<150	>10-18	6	>60	>5-10	>5-10	>5-10
55	0-1.5	>50-150	150-<165	>10-18	3	>60	0-5	0-5	0-5
56	0-1.5	>50-150	125-<150	>10-18	1	>60	0-5	0-5	0-5
56A	0-1.5	>12-50	125-<150	>10-18	20	25-60	0-5	0-5	0-5
57	0-1.5	>150	165-<180	0-4	17	>60	>5-10	>5-10	>5-10
58	0-1.5	>150	165-<180	0-4	11	>60	>30	>10-30	>10-30
59	0-1.5	>12-50	125-<150	>30-48	3	>60	0-5	0-5	0-5
60	>4.5-9	>150	165-<180	0-4	3	>60	0-5	0-5	0-5
61	>1.5-4.5	>50-150	165-<180	0-4	3	>60	0-5	0-5	0-5
62	>1.5-4.5	>150	165-<180	>4-10	1	>60	0-5	0-5	0-5
63	0-1.5	>150	165-<180	>4-10	1	>60	0-5	0-5	0-5
64	0-1.5	>50-150	165-<180	0-4	9	>60	>10-30	>10-30	>10-30
65	0-1.5	>50-150	100-<125	>4-10	2	>60	>30	>30	>10-30
66	0-1.5	>50-150	100-<125	>4-10	19	25-60	0-5	0-5	0-5
67	>1.5-4.5	>150	165-<180	>4-10	4	>60	>5-10	0-5	0-5
68	>1.5-4.5	>150	165-<180	0-4	7	>60	0-5	0-5	0-5
69	0-1.5	>50-150	165-<180	>10-18	3	>60	0-5	0-5	0-5
70	0-1.5	>50-150	165-<180	>10-18	2	>60	>30	>30	>10-30
71	>1.5-4.5	>50-150	125-<150	>10-18	2	>60	>30	>30	>10-30
71A	>1.5-4.5	>50-150	125-<150	>10-18	22	25-60	>30	>30	>10-30
72	>1.5-4.5	>150	125-<150	0-4	7	>60	0-5	0-5	0-5
73	0-1.5	>150	125-<150	>10-18	3	>60	0-5	0-5	0-5
73A	0-1.5	>150	125-<150	>10-18	19	25-60	0-5	0-5	0-5
74	0-1.5	>7-12	165-<180	0-4	5	>60	>5-10	0-5	0-5
75	0-1.5	>12-50	165-<180	0-4	5	>60	>5-10	0-5	0-5
76	>1.5-4.5	>150	125-<150	>10-18	5	>60	>5-10	0-5	0-5
77	>4.5-9	>150	125-<150	0-4	5	>60	>5-10	0-5	0-5
78	0-1.5	>150	165-<180	>4-10	4	>60	>5-10	0-5	0-5
79	0-1.5	>50-150	100-<125	>10-18	1	>60	0-5	0-5	0-5
80	0-1.5	>50-150	150-<165	>10-18	19	25-60	0-5	0-5	0-5
81	0-1.5	>50-150	165-<180	>10-18	1	>60	0-5	0-5	0-5
82	>1.5-4.5	>150	165-<180	0-4	4	>60	>5-10	0-5	0-5
83	>1.5-4.5	>150	165-<180	0-4	16	>60	0-5	0-5	0-5
84	>1.5-4.5	>150	165-<180	0-4	10	>60	>30	>30	>10-30
85	0-1.5	>150	165-<180	>10-18	11	>60	>30	>10-30	>10-30
86	>1.5-4.5	>50-150	125-<150	>18-30	3	>60	0-5	0-5	0-5
86A	>1.5-4.5	>50-150	125-<150	>18-30	19	25-60	0-5	0-5	0-5
87	0-1.5	>150	165-<180	0-4	16	>60	0-5	0-5	0-5
88	>1.5-4.5	>50-150	125-<150	>4-10	3	>60	0-5	0-5	0-5
88A	>1.5-4.5	>50-150	125-<150	>4-10	19	25-60	0-5	0-5	0-5
89	0-1.5	>150	165-<180	0-4	14	>60	>5-10	0-5	0-5
90	0-1.5	>50-150	125-<150	>18-30	10	>60	>30	>30	>10-30
91	>1.5-4.5	>150	165-<180	0-4	19	25-60	0-5	0-5	0-5
92	>1.5-4.5	>150	165-<180	0-4	18	25-60	>30	>30	>30
93	0-1.5	>12-50	125-<150	>10-18	7	>60	0-5	0-5	0-5
94	0-1.5	>50-150	165-<180	>10-18	19	25-60	0-5	0-5	0-5
95	0-1.5	>50-150	165-<180	0-4	15	>60	>5-10	>5-10	>5-10
96	>1.5-4.5	>50-150	165-<180	>10-18	3	>60	0-5	0-5	0-5
96A	>1.5-4.5	>50-150	165-<180	>10-18	19	25-60	0-5	0-5	0-5
97	>1.5-4.5	>150	125-<150	>4-10	3	>60	0-5	0-5	0-5
97A	>1.5-4.5	>150	125-<150	>4-10	19	25-60	0-5	0-5	0-5
98	0-1.5	>150	165-<180	0-4	8	>60	>10-30	>10-30	>10-30

KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

Wet Season Areal Terrain Types

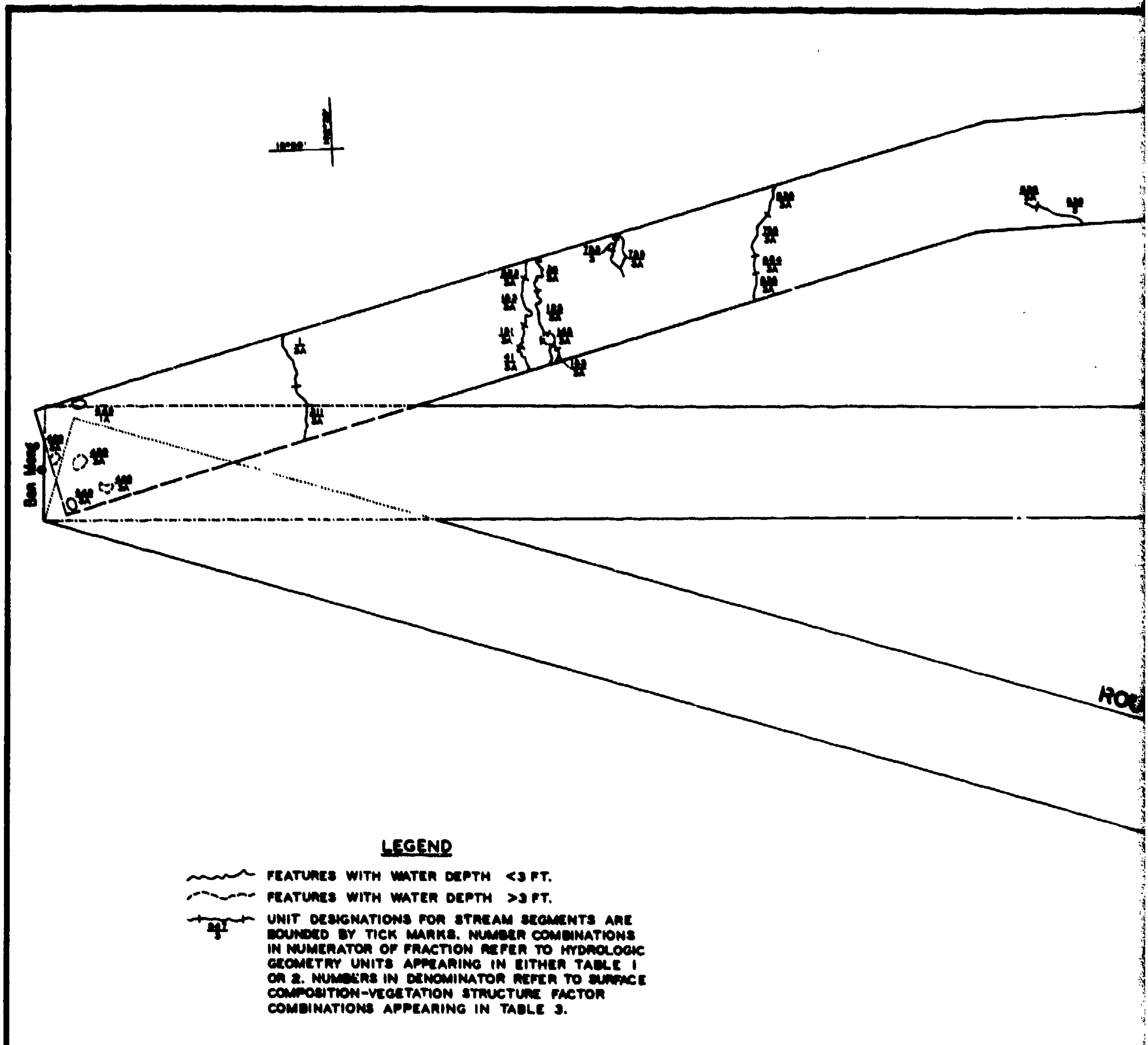
SCALE

0 1 2 3 4 MILES



Approach Angle deg	Step Height in.	Surface Composition-Vegetation Combination No.	Surface Composition Rating Cone Index	Vegetation Structure: Spacing of Stems, ft — Stems of Diameter Equal to or Less Than 2 in.	5 in.	9 in.	20 in.	Stems of Diameter Equal to or More Than 1 in.	3 in.	6 in.	10 in.
5-<180	0-4	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
5-<180	0-4	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
5-<150	>10-18	6	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30	>30
0-<165	>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
5-<150	>10-18	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
5-<150	>10-18	20	25-60	0-5	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
5-<180	0-4	17	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>10-30	>30
5-<180	0-4	11	>60	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30	>30
5-<150	>30-48	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
5-<180	0-4	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
5-<160	0-4	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
5-<180	>4-10	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
5-<180	>4-10	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
5 <180	0-4	9	>60	>10-30	>10-30	>10-30	>10-30	>10-30	>10-30	>30	>30
100-<125	>4-10	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
100-<125	>4-10	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
165-<180	>4-10	4	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
165-<180	0-4	7	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
165-<180	>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
165-<180	>10-18	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
125-<150	>10-18	2	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
125-<150	>10-18	22	25-60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
125-<150	0-4	7	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
125-<150	>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
125-<150	>10-18	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
165-<180	0-4	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
165-<180	0-4	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
125-<150	>10-18	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
125-<150	0-4	5	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
165-<180	>4	4	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
100-<125	>10-18	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
150-<165	>10-18	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
165-<180	>10-18	1	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
165-<180	0-4	4	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
165-<180	0-4	16	>60	0-5	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
165-<180	0-4	10	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>30	>30
165-<180	>10-18	11	>60	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30	>30
125-<150	>18-30	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
125-<150	>18-30	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
165-<180	0-4	16	>60	0-5	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
125-<150	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
125-<150	>4-10	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
165-<180	0-4	14	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
125-<150	>18-30	10	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>30	>30
165-<180	0-4	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
165-<180	0-4	18	25-60	>30	>30	>30	>30	>30	>30	>30	>30
125-<150	>10-18	7	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
165-<180	>10-18	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
165-<180	0-4	15	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30
165-<180	>10-18	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
165-<180	>10-18	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
125-<150	>4-10	3	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
125-<150	>4-10	19	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
165-<180	0-4	8	>60	>10-30	>10-30	>10-30	>10-30	>10-30	>10-30	>10-30	>30

Plate 3


LEGEND
FEATURES WITH WATER DEPTH <3 FT.
FEATURES WITH WATER DEPTH >3 FT.
UNIT DESIGNATIONS FOR STREAM SEGMENTS ARE BOUNDED BY TICK MARKS. NUMBER COMBINATIONS IN NUMERATOR OF FRACTION REFER TO HYDROLOGIC GEOMETRY UNITS APPEARING IN EITHER TABLE 1 OR 2. NUMBERS IN DENOMINATOR REFER TO SURFACE COMPOSITION-VEGETATION STRUCTURE FACTOR COMBINATIONS APPEARING IN TABLE 3.
Ban Meng

2

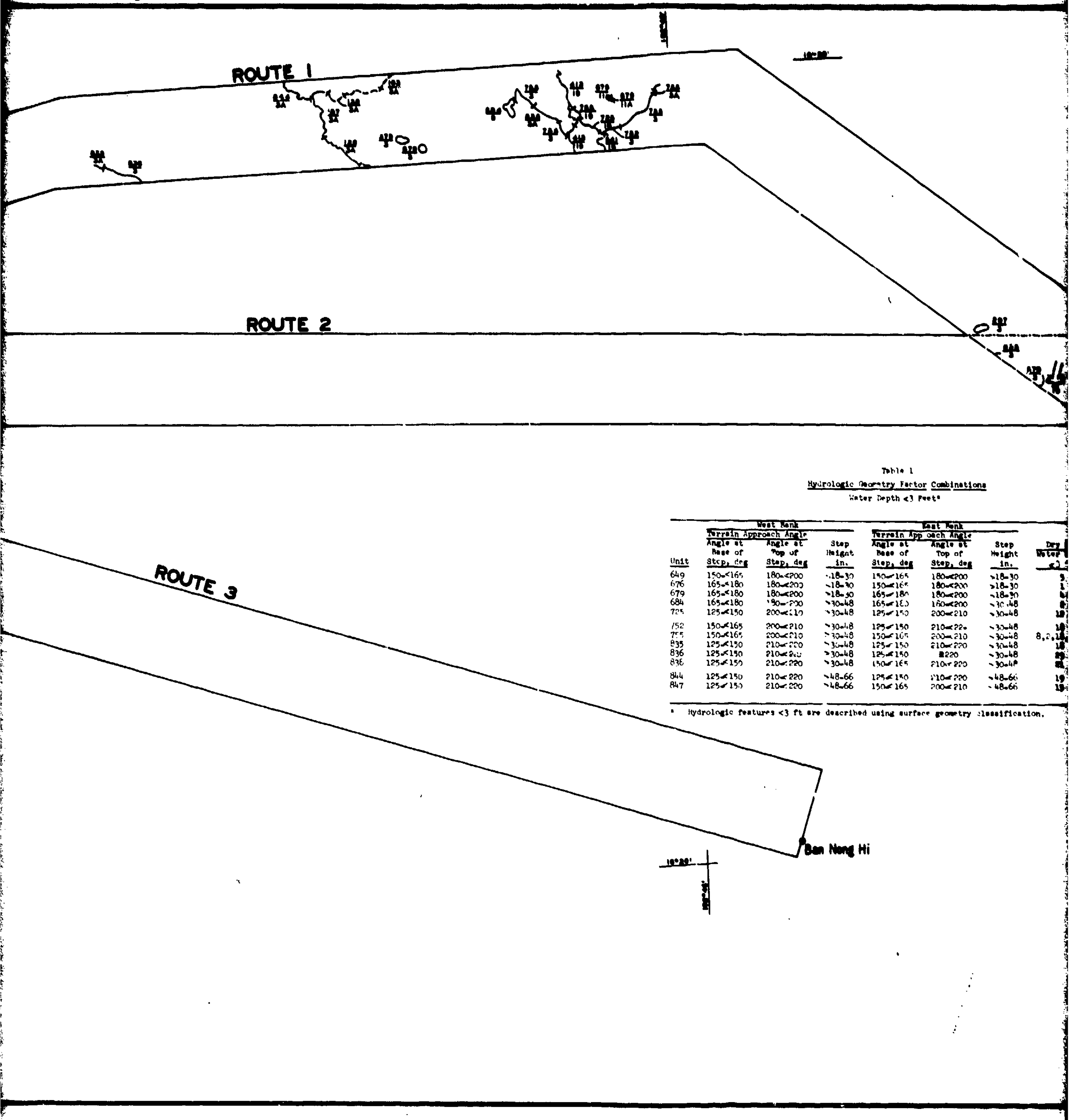


Table 1

Hydrologic Geometry Factor Combinations

Water Depth <3 Feet*

	West Bank			East Bank			
	Terrain Approach Angle			Terrain Approach Angle			
Unit	Angle at Base of Step, deg	Angle at Top of Step, deg	Step Height in.	Angle at Base of Step, deg	Angle at Top of Step, deg	Step Height in.	Dry Water <3 [illegible]
649	150-<165	180-<200	>18-30	150-<165	180-<200	>18-30	9 [illegible]
676	165-<180	180-<200	>18-30	150-<165	180-<200	>18-30	1 [illegible]
679	165-<180	180-<200	>18-30	165-<180	180-<200	>18-30	[illegible]
684	165-<180	180-<200	>30-48	165-<180	180-<200	>30-48	[illegible]
725	125-<150	200-<210	>30-48	125-<150	200-<210	>30-48	10 [illegible]
752	150-<165	200-<210	>30-48	125-<150	210-<220	>30-48	10 [illegible]
755	150-<165	200-<210	>30-48	150-<165	200-<210	>30-48	8,2,1 [illegible]
835	125-<150	210-<220	>30-48	125-<150	210-<220	>30-48	18 [illegible]
836	125-<150	210-<220	>30-48	125-<150	≥220	>30-48	[illegible]
838	125-<150	210-<220	>30-48	150-<165	210-<220	>30-48	[illegible]
844	125-<150	210-<220	>48-66	125-<150	210-<220	>48-66	19 [illegible]
847	125-<150	210-<220	>48-66	150-<165	200-<210	>48-66	19 [illegible]

* Hydrologic features <3 ft are described using surface geometry classification.

3

KHON KAEN
MOBILITY

Wet Season Li

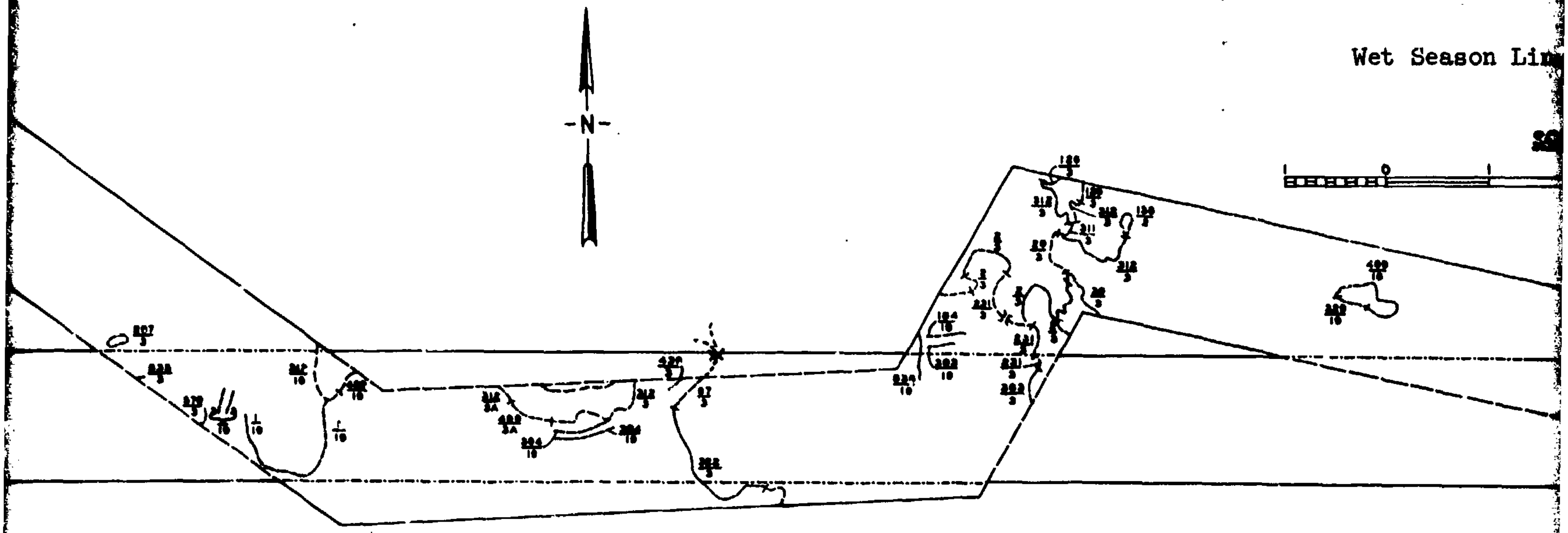


Table 1

[illegible]tor Combinations

<3 Feet*

	East Bank			
	Approach Angle			
	Angle at Top of Step, deg	Step Height in.	Dry Season Map Unit Water Depth <3 ft	Water Depth >3 ft
[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	190-<200	[illegible]	1	
[illegible]	180-<200	[illegible]	4	
[illegible]	190-<200	[illegible]	2	
[illegible]	200-<210	[illegible]	12	
[illegible]	210-<2[illegible]	[illegible]	18	
[illegible]	200-<210	[illegible]	8,[illegible],12	
[illegible]	210-<220	[illegible]	18	
[illegible]	[illegible]	[illegible]	20	
[illegible]	[illegible]	[illegible]	21	
[illegible]	210-<220	[illegible]	19	
[illegible]	200-<210	[illegible]	15	

* Surface geometry classification.

Table 2

Hydrologic Geometry Factor Combinations

Water Depth >3 Feet

	West Bank			East Bank					
Unit	Contact Approach Angle deg	Step Height in.	Position of Step Base, in.	Contact Approach Angle deg	Step Height in.	Position of Step Base, in.	Water Depth ft	Dry Season Map Unit Water Depth <3 ft	Water Depth >3 ft
1	<145	--	--	<145	--	--	3-4.5	29,15	
[illegible]	<145	--	--	<145	--	--	>4.5	2,25	2
[illegible]	145-155	--	--	145-155	--	--	3-4.5		3
20	<145	--	--	145-155	36-48	At water level	>4.5		3
23	>165-180	12-<24	1-12 awl*	<165-180	12-<24	1-12 awl	>4.5		
30	<145	--	--	145-165	36-48	>18-36 bwl**	>4.5	25	
36	<145	12-<24	>18-36 bwl	<145	12-<24	>18-36 bwl	>4.5	19	
41	<145	12-<24	1-18 bwl	<145	12-<24	1-18 bwl	3-4.5	30	
67	<145	36-48	>48 bwl	145-155	>48	>48 bwl	>4.5		27
103	<145	>48	>48 bwl	<145	>48	>48 bwl	>4.5		25
125	145-155	--	--	145-155	--	--	3-4.5	19	
126	145-155	--	--	145-155	--	--	>4.5	25,5	
133	[illegible]	--	--	155-165	--	--	>4.5		25,7
[illegible]	[illegible]	--	--	165-180	--	--	3-4.5		19
151	145-155	12-<24	>36-48 bwl	145-155	12-<24	>36-48 bwl	>4.5	30	
153	145-155	12-<24	>18-36 bwl	145-155	12-<24	>18-36 bwl	3-4.5	19	
[illegible]	145-155	24-<36	>18-36 bwl	145-155	24-<36	>18-36 bwl	>4.5		
184	145-155	24-<36	>18-36 bwl	155-165	--	--	>4.5	[illegible]3	
187	145-155	24-<36	>18-36 bwl	165-180	24-<36	>36-48 bwl	>4.5	25	
231	145-155	36-48	>18-36 bwl	145-155	12-<24	>18-36 bwl	>4.5		2,11
297	155-165	--	--	145-155	--	--	3-4.5	2	
303	155-165	--	--	145-155	24-<36	>18-36 bwl	3-4.5	13	
304	155-165	--	--	145-155	24-<36	1-18 bwl	3-4.5	9	
311	155-165	--	--	155-165	--	--	3-4.5	8,12	
312	155-165	--	--	155-165	--	--	>4.5	12,5	8
322	155-165	--	--	165-180	36-48	>36-48 bwl	>4.5	11	26
329	155-165	<12	At water level	155-165	<12	At water level	3-4.5	9	
383	155-165	24-<36	1-12 awl	145-155	--	--	>4.5		2
413	155-165	36-48	1-18 bwl	155-165	36-48	1-18 bwl	>4.5	11,27,31	
439	155-165	>48	>36-48 bwl	155-165	>48	>36-48 bwl	>4.5	20	
489	165-180	--	--	165-180	--	--	3-4.5	9	5
490	165-180	--	--	165-180	--	--	>4.5		8
523	165-180	24-<36	>18-36 bwl	<145	24-<36	>18-36 bwl	3-4.5	19	
541	165-180	24-<36	At water level	<145	--	--	>4.5	19	
570	165-180	36-48	1-18 bwl	<145	--	--	3-4.5	24	

* Above water level.
** Below water level.

Table

Surface Composition-Vegetation

Combination No.	Surface Composition RCI	Stems of Diameter Equal to or		
		2 in.	5 in.	9 in.
1	25-60	0-5	0-5	0-5
1A	>60	0-5	0-5	0-5
2	25-60	>30	>30	>30
3	>60	0-5	0-5	0-5
3A	25-60	0-5	0-5	0-5
4	>60	0-5	0-5	0-5
5	>60	0-5	0-5	0-5
6	>60	0-5	0-5	0-5
7	>60	0-5	0-5	0-5
8	>60	>5-10	0-5	0-5
9	>60	>5-10	0-5	0-5
10	>60	>5-10	0-5	0-5
11	>60	>5-10	>5-10	>5-10
11A	25-60	>5-10	>5-10	>5-10
12	>60	>5-10	>5-10	>5-10
13	>60	>5-10	>5-10	>5-10
14	>60	>10-30	>10-30	>10-30
15	>60	>10-30	>10-30	>10-30
16	>60	>30	>10-30	>10-30
17	>60	>30	>30	>10-30
18	>60	>30	>30	>10-30
19	>60	>30	>30	>30

KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

Wet Season Linear Terrain Types

SCALE

1 0 1 2 3 4 MILES

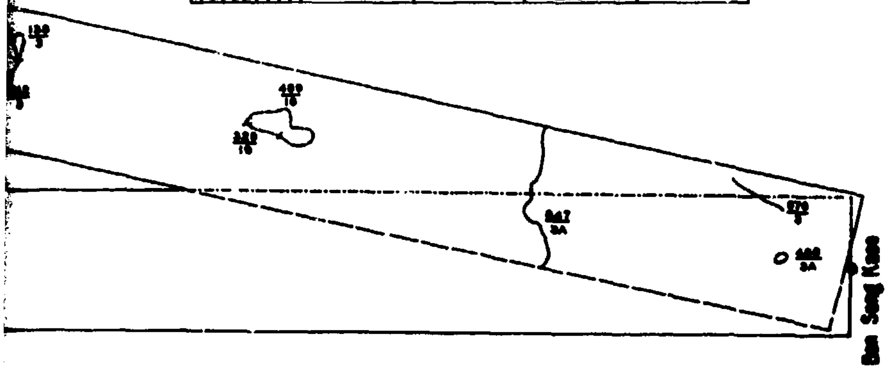
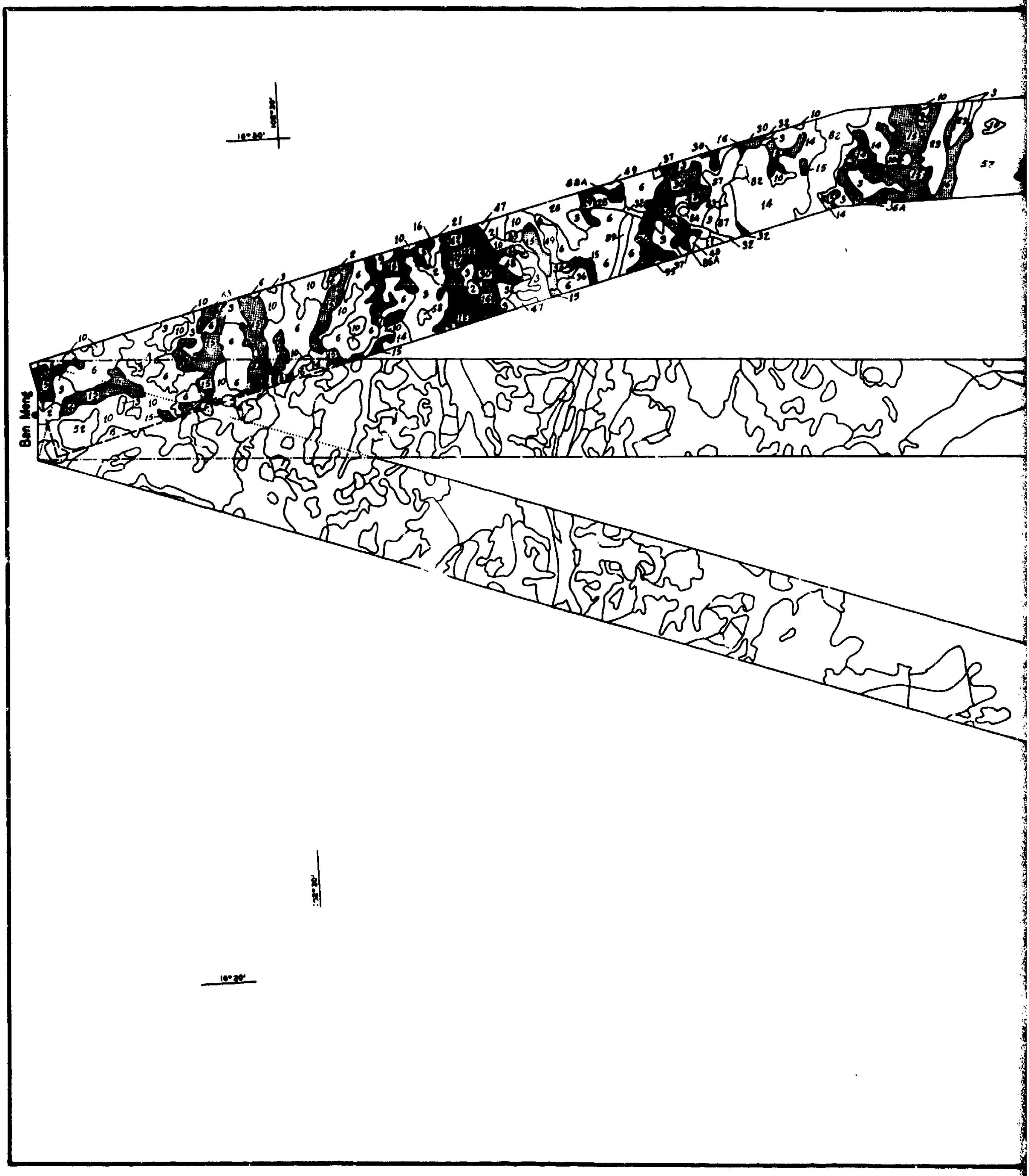
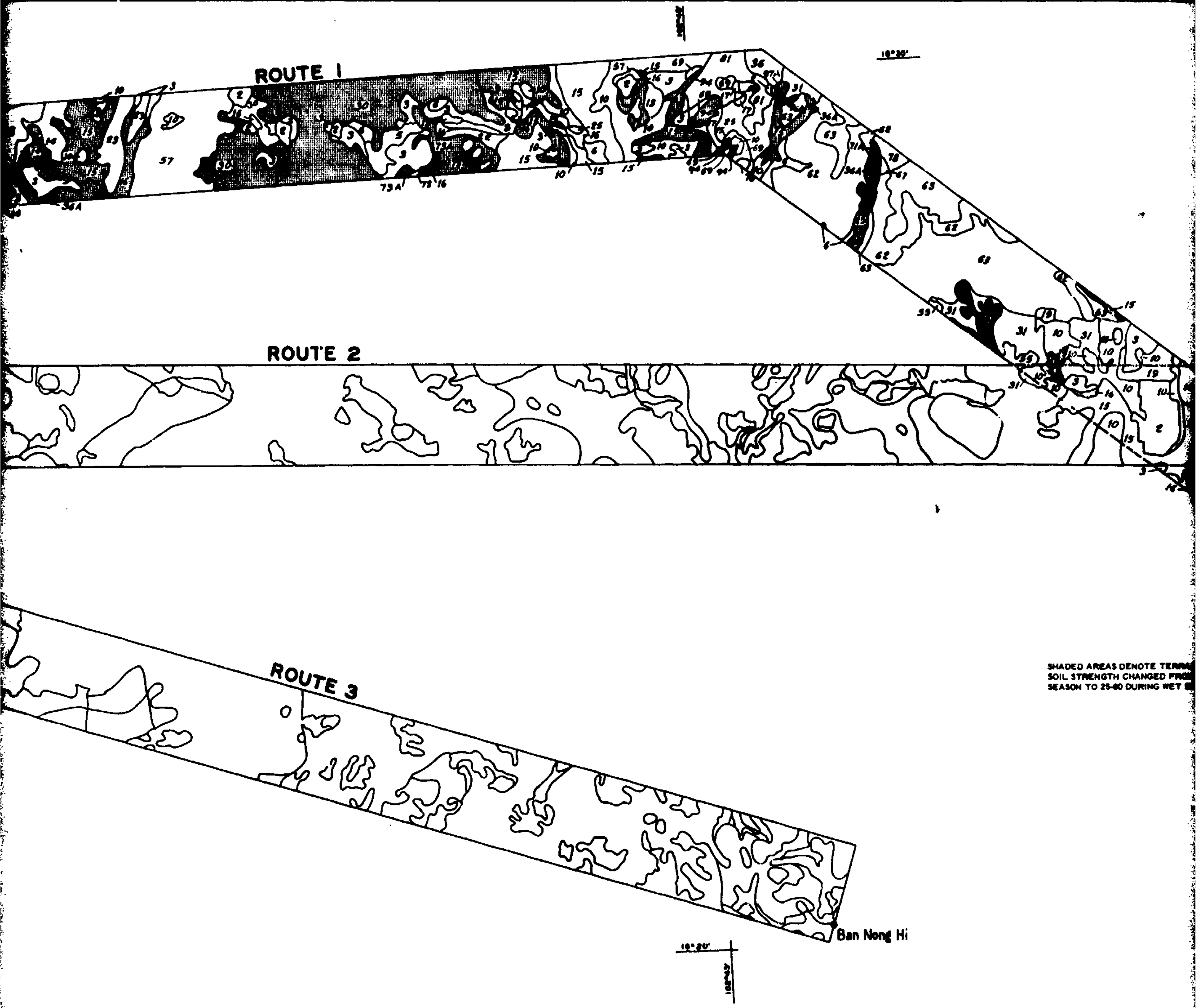


Table 3

Surface Composition-Vegetation Structure Factor Combinations

Combination No.	Surface Composition RCI	Vegetation Structure Spacing of Stems, ft — Stems of Diameter Equal to or Less Than				Stems of Diameter Equal to or More Than			
		2 in.	5 in.	9 in.	50 in.	1 in.	3 in.	6 in.	10 in.
1	25-60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
1A	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
2	25-60	>30	>30	>30	>30	>30	>30	>30	>30
3	>60	0-5	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
3A	25-60	0-5	0-5	0-5	0-5	0-5	>5-10	>10-30	>30
4	>60	0-5	0-5	0-5	0-5	0-5	>5-10	>30	>30
5	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
6	>60	0-5	0-5	0-5	0-5	0-5	>10-30	>30	>30
7	>60	0-5	0-5	0-5	0-5	0-5	>30	>30	>30
8	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>10-30	[illegible]
9	>60	>5-10	0-5	0-5	0-5	0-5	>5-10	>30	>30
10	>60	>5-10	0-5	0-5	0-5	0-5	>10-30	>10-30	>30
11	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30
11A	25-60	>5-10	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30
12	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>10-30	>30
13	>60	>5-10	>5-10	>5-10	>5-10	>5-10	>10-30	>30	>30
14	>60	>10-30	>10-30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
15	>60	>10-30	>10-30	>10-30	>10-30	>10-30	>10-30	>30	>30
16	>60	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30	>30
17	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>10-30	>30
18	>60	>30	>30	>10-30	>10-30	>10-30	>10-30	>30	>30
19	>60	>30	>30	>30	>30	>30	>30	>30	>30


Ban Meng


ROUTE 1
ROUTE 2
ROUTE 3
Ban Nong Hi
SHADED AREAS DENOTE TERRA
SOIL STRENGTH CHANGED FRO
SEASON TO 25-60 DURING WET

3

KHON KAEN CROS

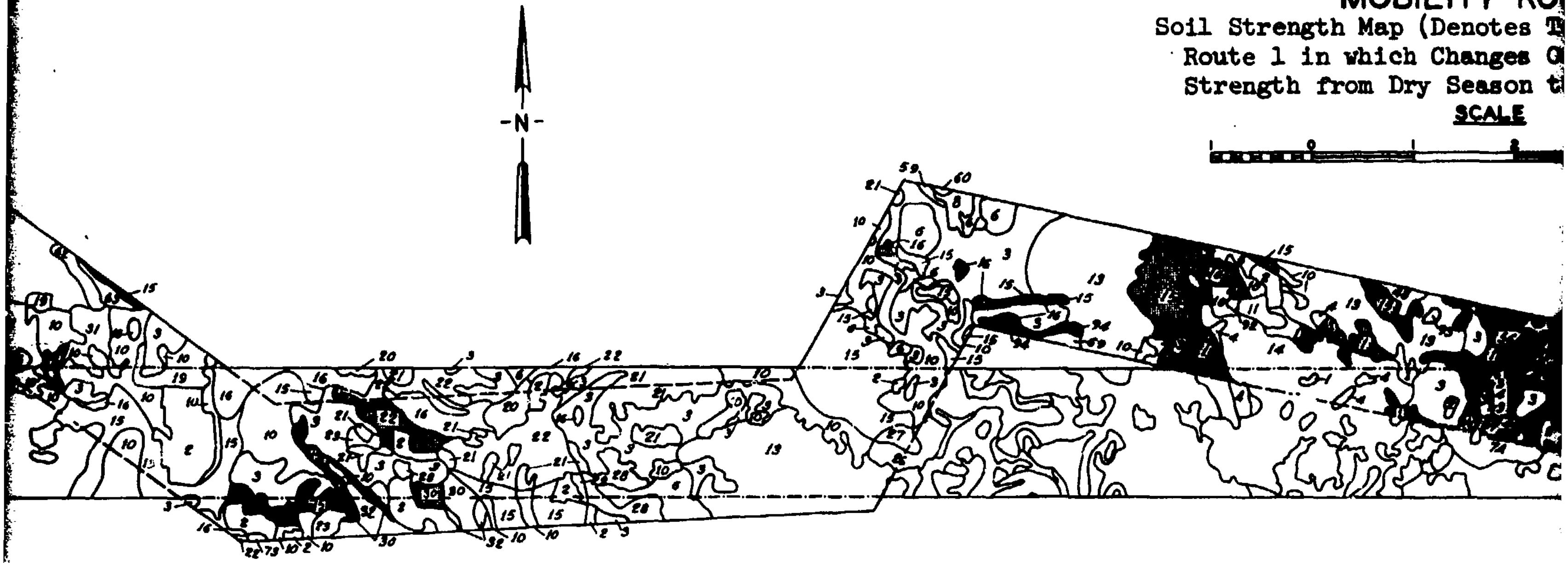
MOBILITY RO

Soil Strength Map (Denotes T

Route 1 in which Changes O

Strength from Dry Season t

SCALE



SHADED AREAS DENOTE TERRAIN TYPES IN WHICH SOIL STRENGTH CHANGED FROM >60 DURING DRY SEASON TO 25-60 DURING WET SEASON.

4

KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

Soil Strength Map (Denotes Terrain Type along Route 1 in which Changes Occurred in Soil Strength from Dry Season to Wet Season

SCALE

1 0 1 2 3 4 MILES

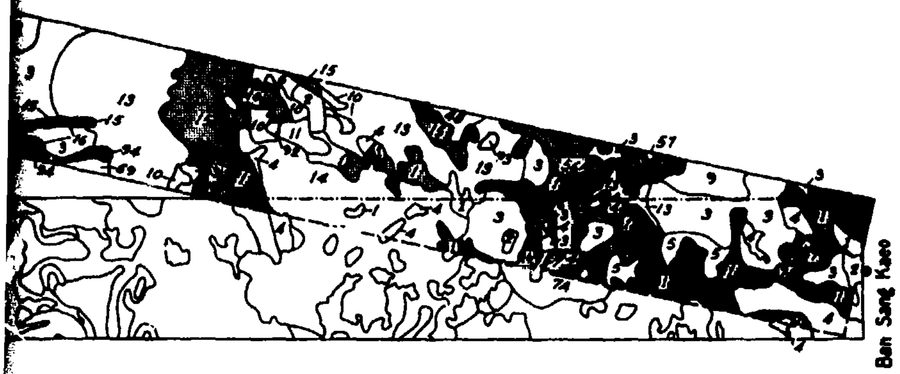
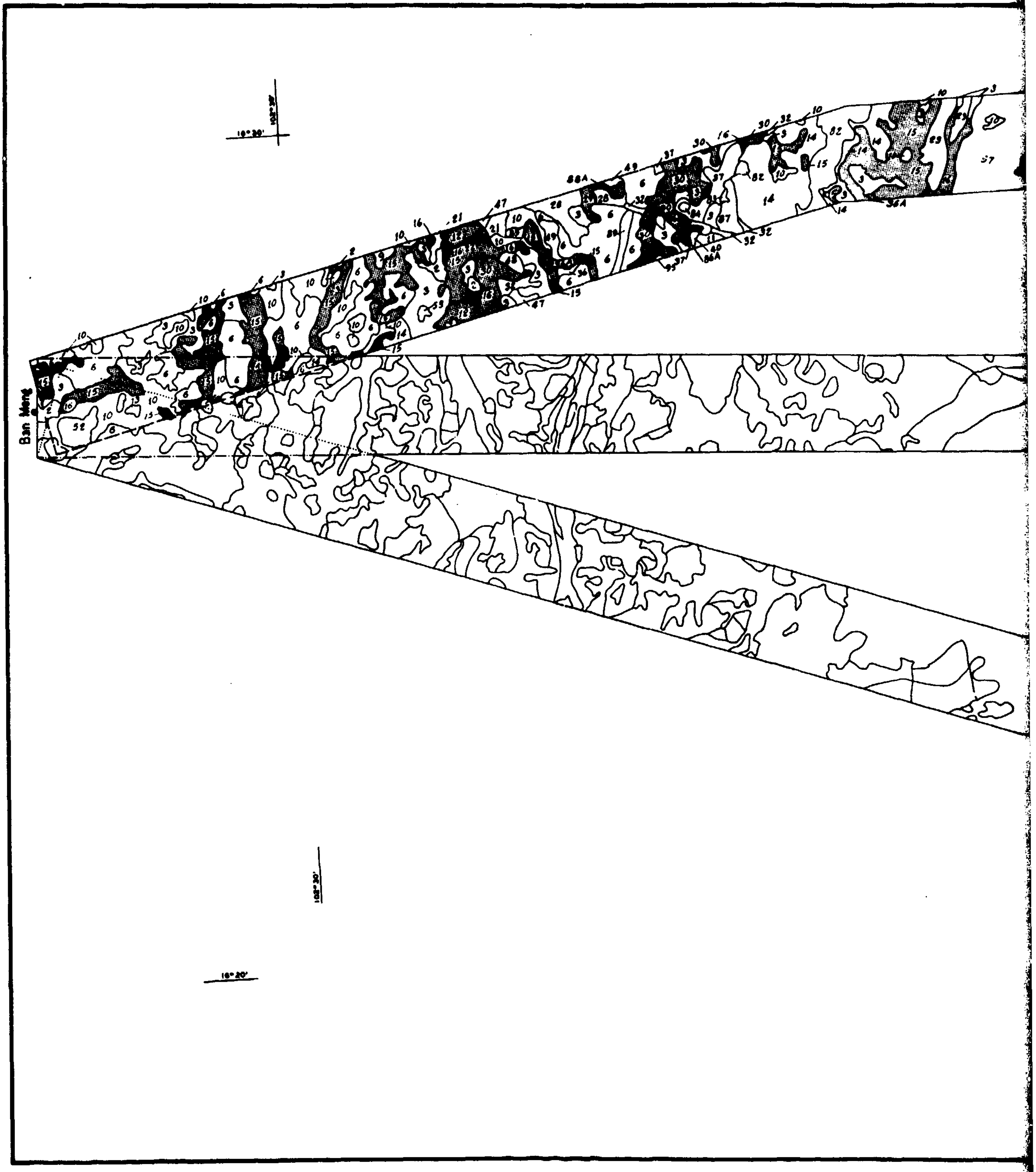
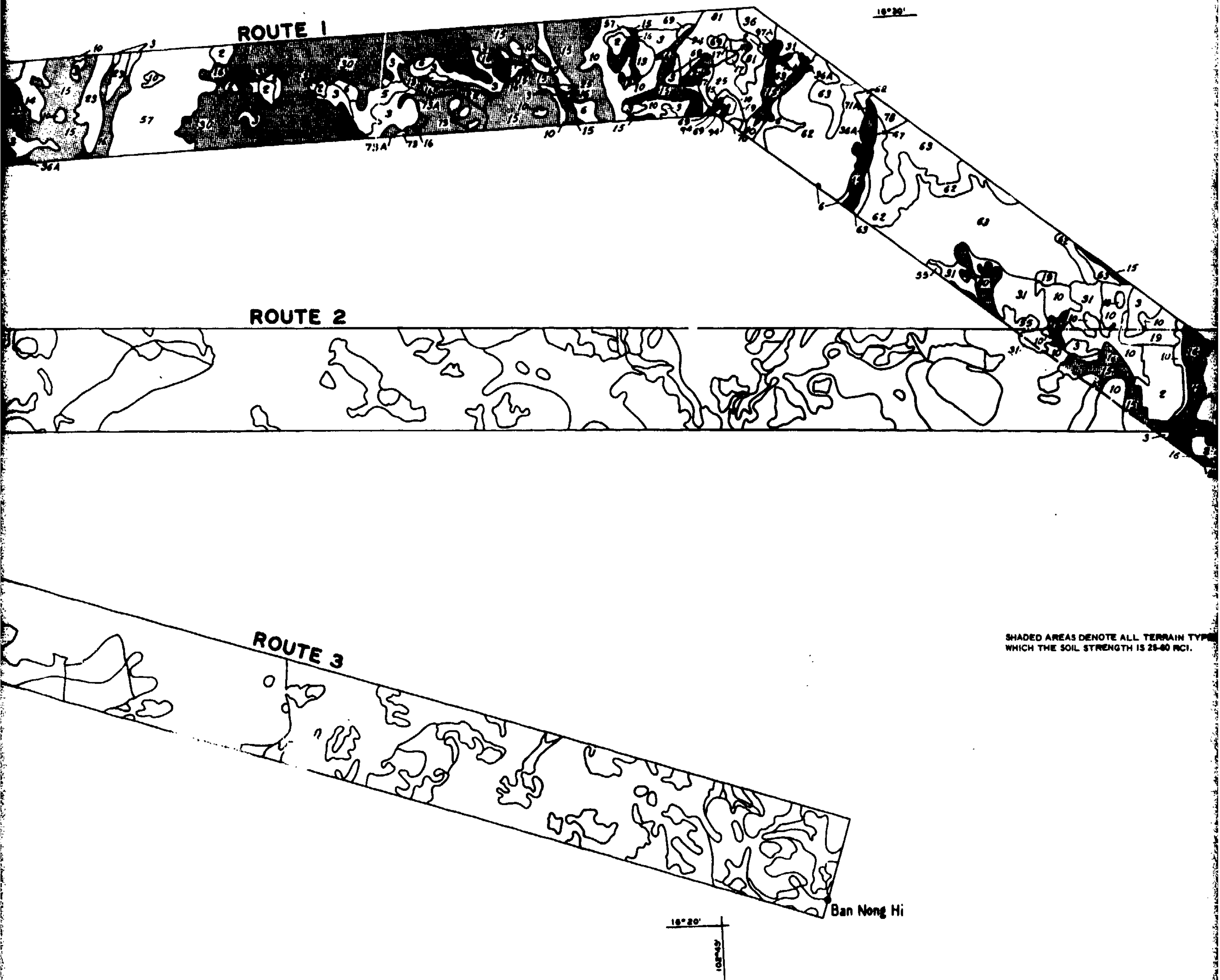


Plate 5


Ban Meng

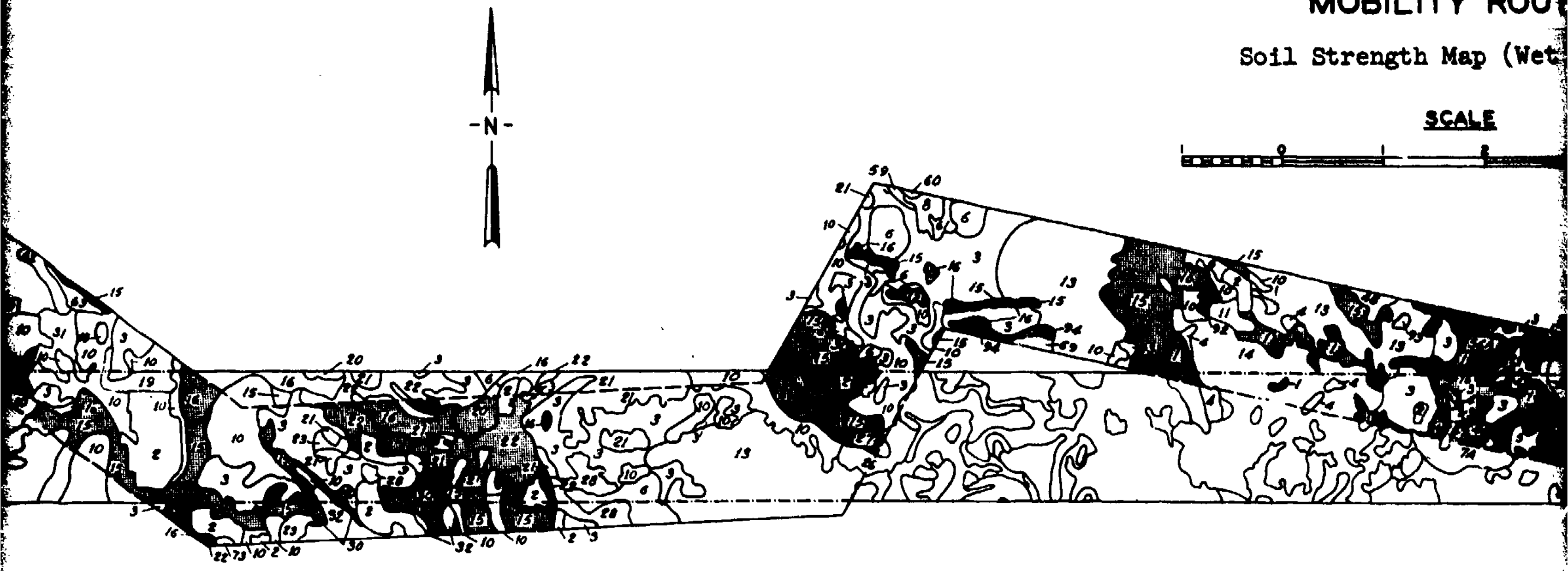
2


ROUTE 1
ROUTE 2
ROUTE 3
Ban Nong Hi
16°20'
SHADED AREAS DENOTE ALL TERRAIN TYPE
WHICH THE SOIL STRENGTH IS 25-60 RCI.

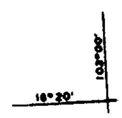
3

KHON KAEN CROSS-
MOBILITY ROU

Soil Strength Map (Wet



AREAS DENOTE ALL TERRAIN TYPES IN
THE SOIL STRENGTH IS 25-60 RCI.



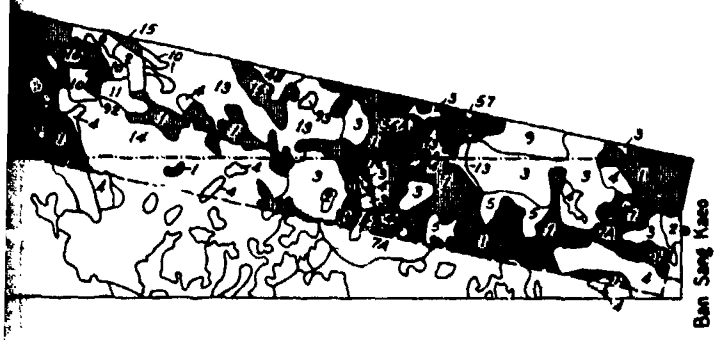
4

KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

Soil Strength Map (Wet Season)

SCALE

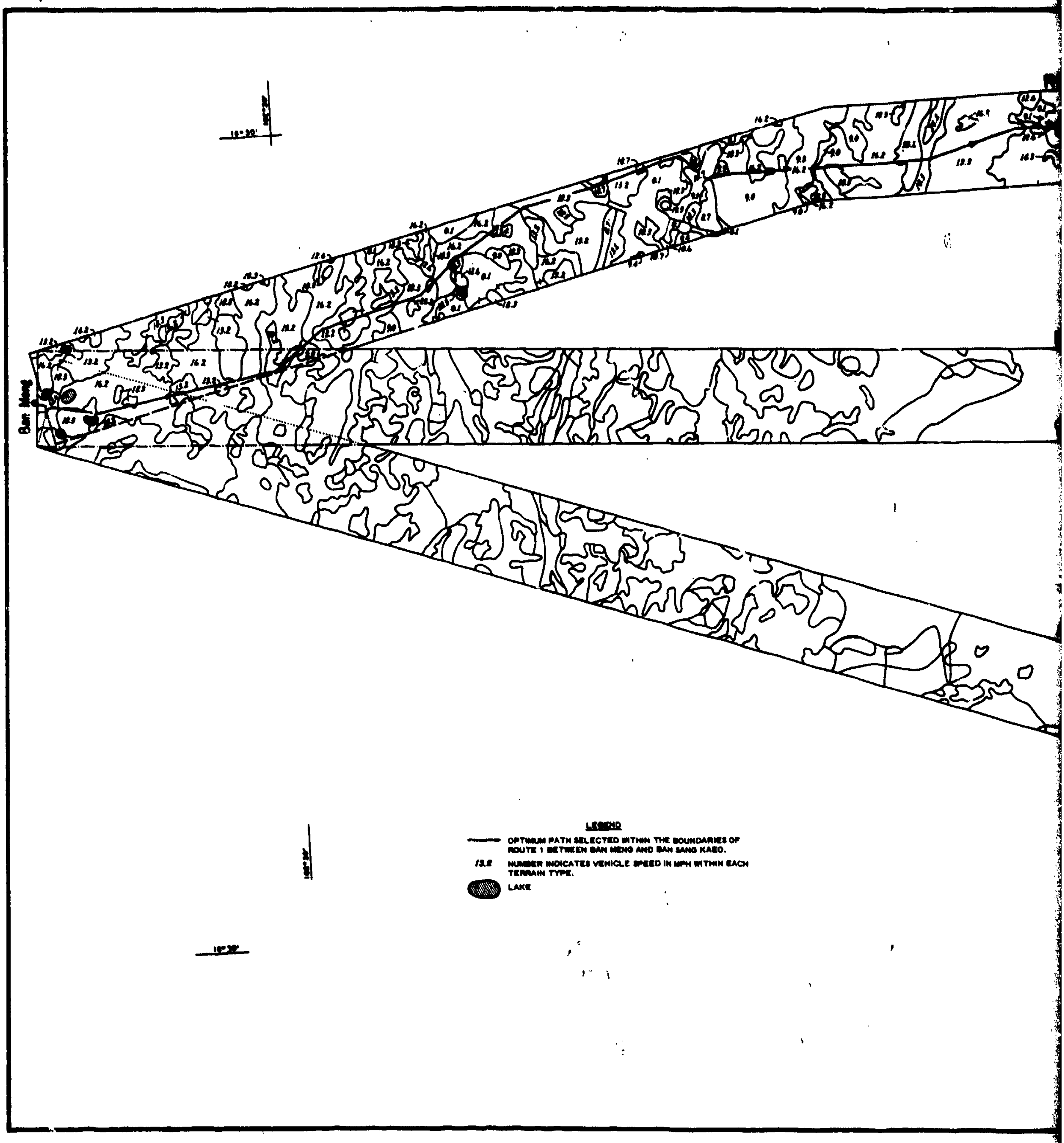
1 0 1 2 3 4 MILES



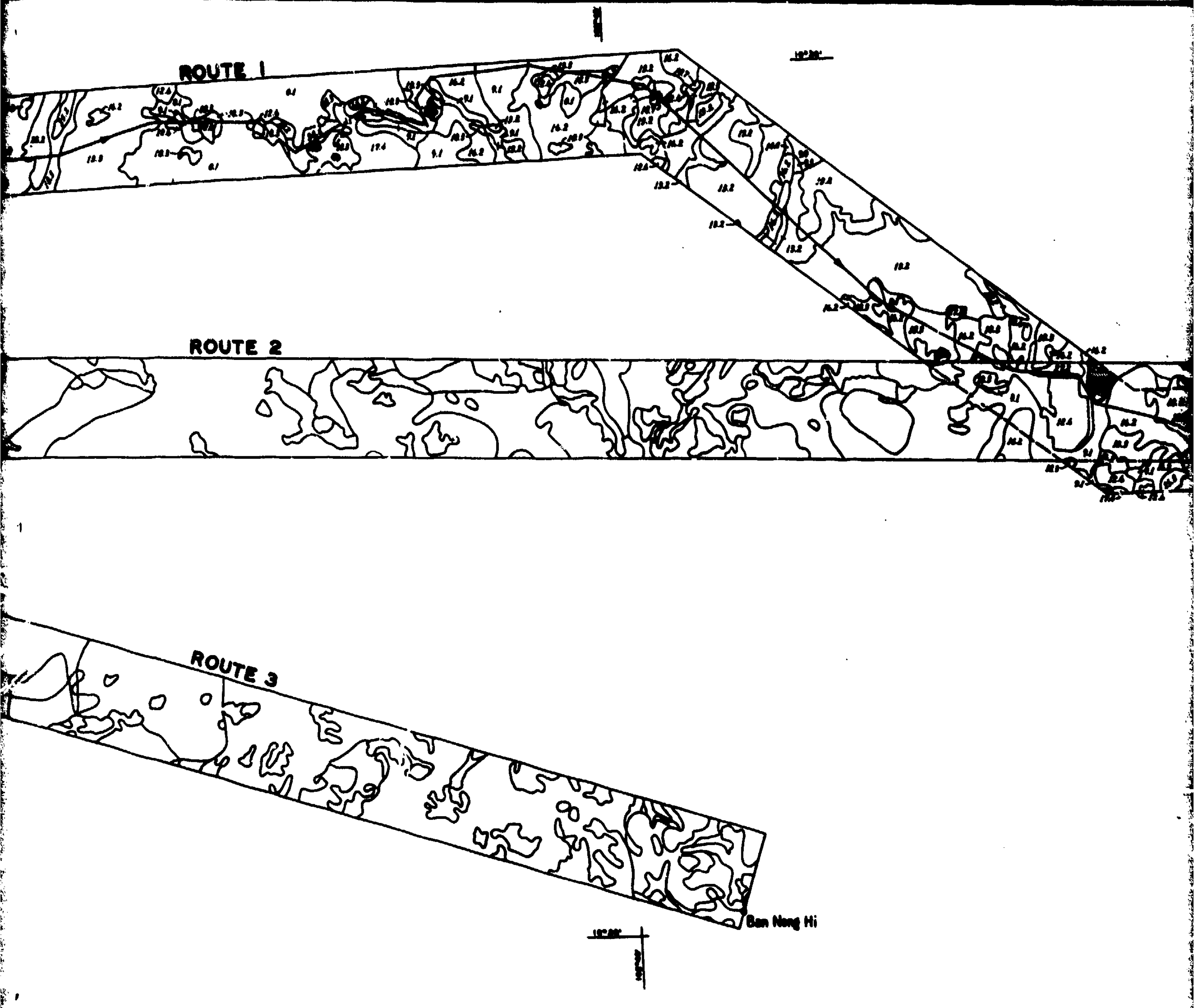
16°20'

102°00'

Plate 6


Ban Meng
LEGEND
OPTIMUM PATH SELECTED WITHIN THE BOUNDARIES OF ROUTE 1 BETWEEN BAN MENG AND BAN SANG KAEO.
13.2 NUMBER INDICATES VEHICLE SPEED IN MPH WITHIN EACH TERRAIN TYPE.
LAKE

2

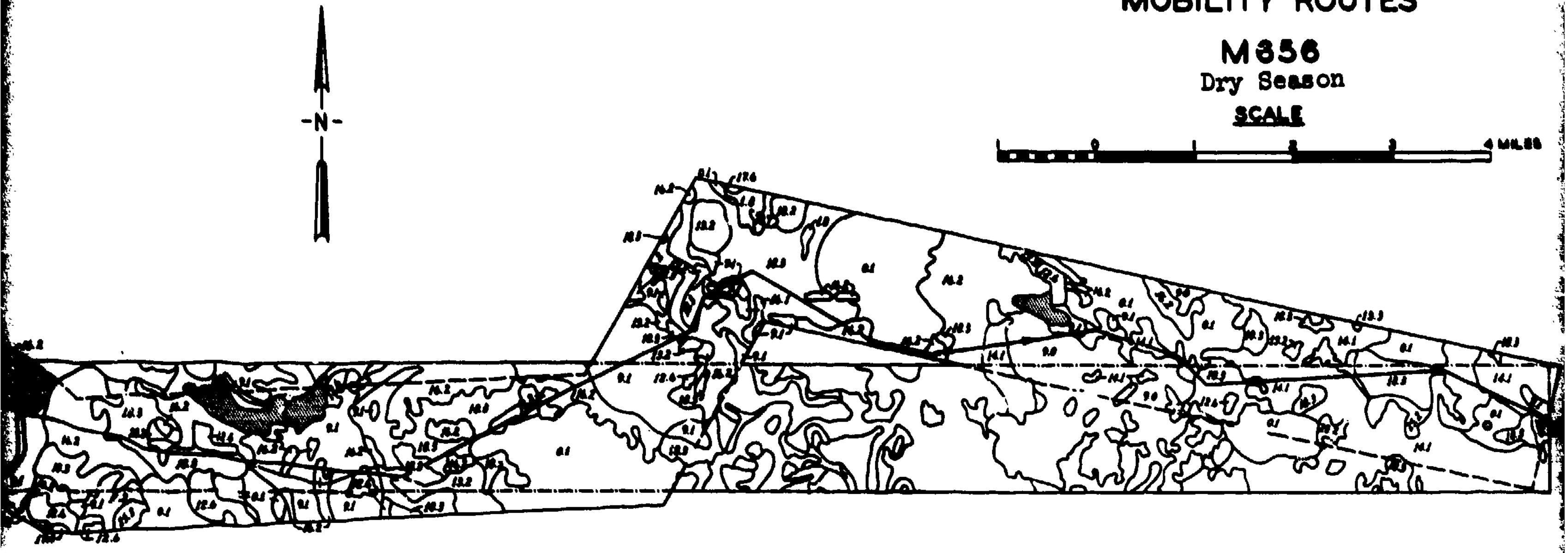


3

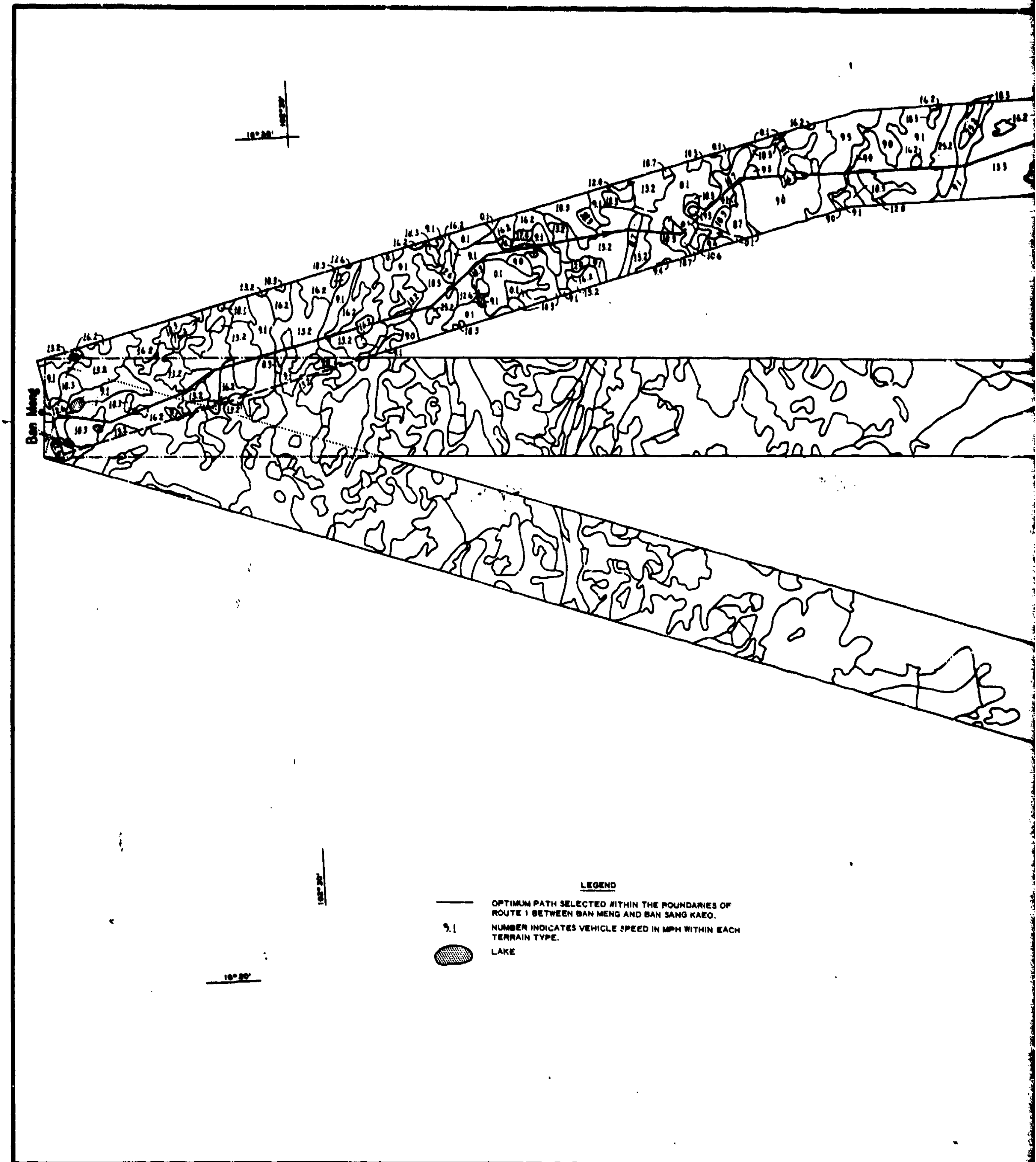
KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

M656

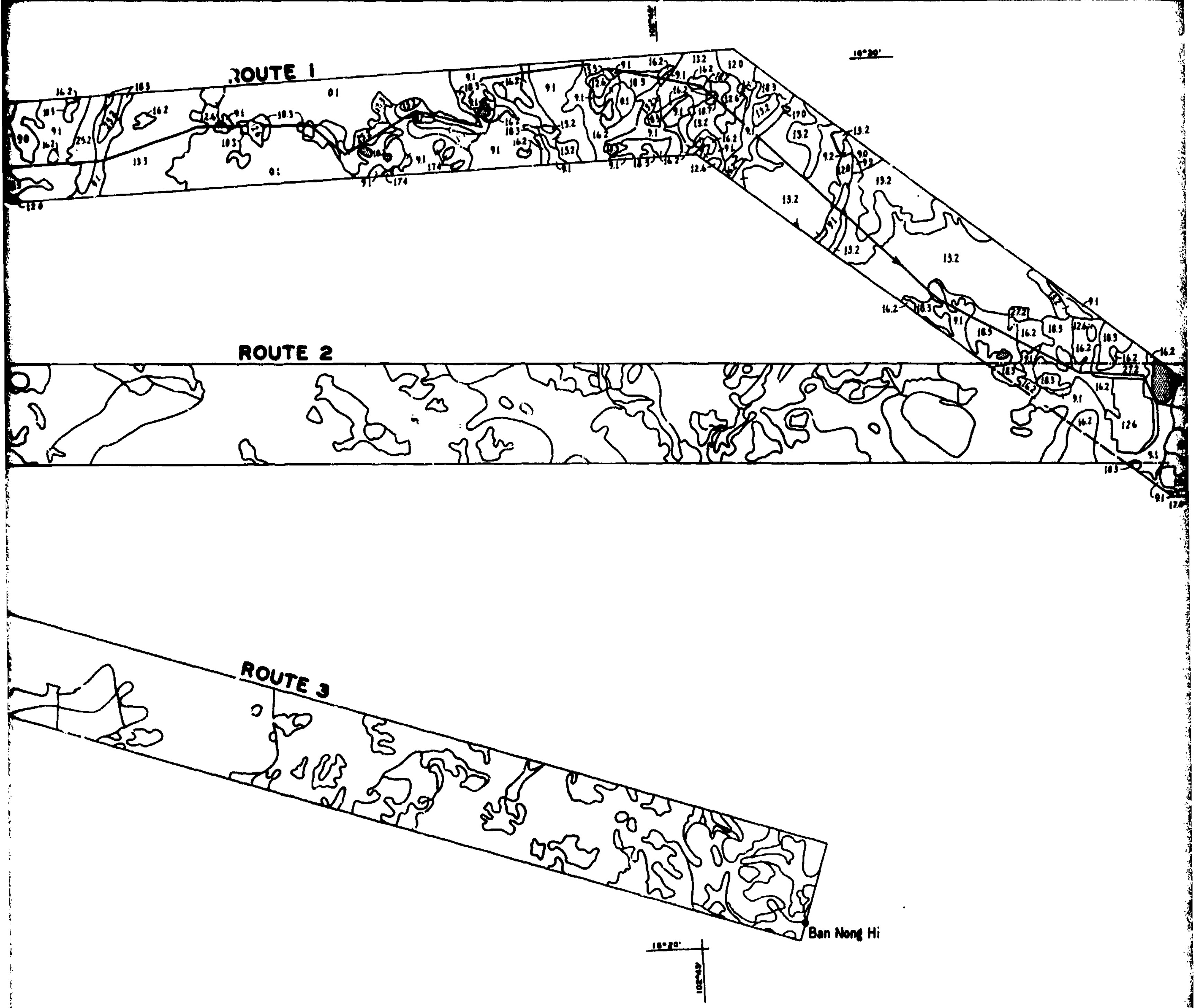
Dry Season



Plat


Ban Meng
LEGEND
OPTIMUM PATH SELECTED WITHIN THE BOUNDARIES OF ROUTE 1 BETWEEN BAN MENG AND BAN SANG KAEO.
9.1
NUMBER INDICATES VEHICLE SPEED IN MPH WITHIN EACH TERRAIN TYPE.
LAKE

2



3

KHON KAEN CROSS

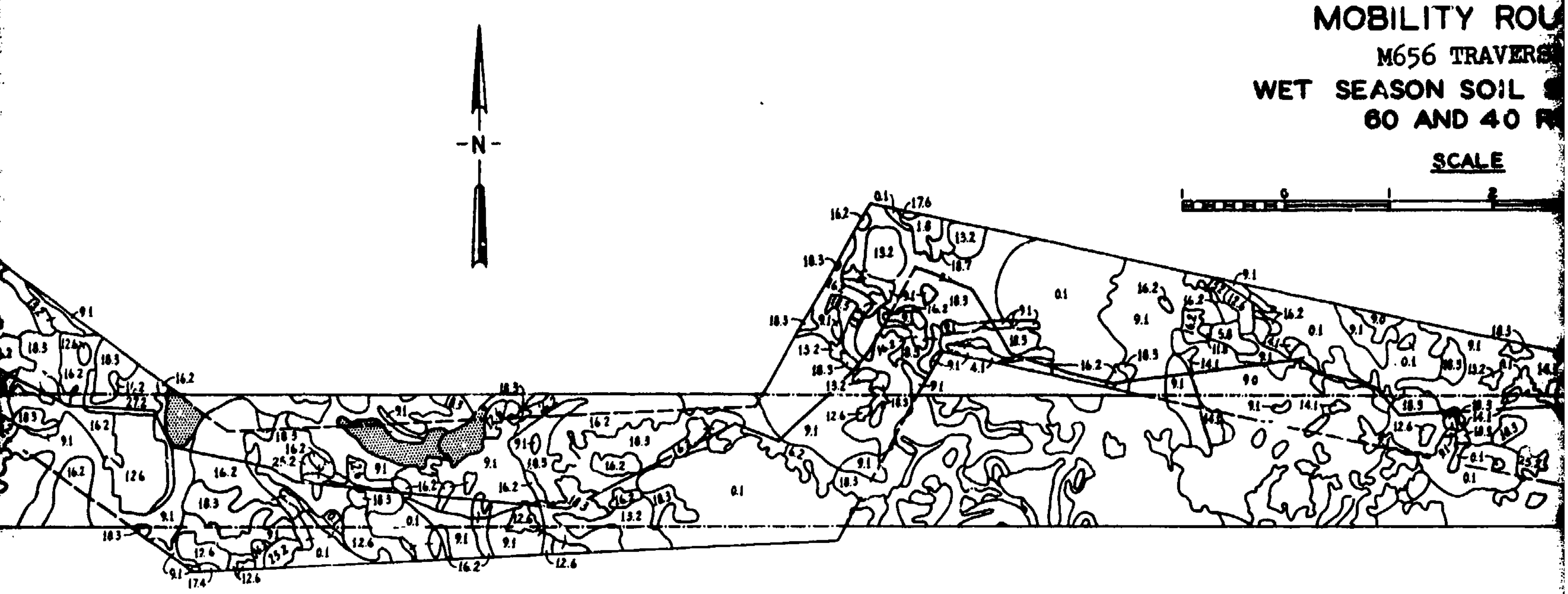
MOBILITY ROU

M656 TRAVERS

WET SEASON SOIL

60 AND 40 R

SCALE



4

KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

M656 TRAVERSE

WET SEASON SOIL STRENGTH
60 AND 40 RCI

SCALE

1 0 1 2 3 4 MILES

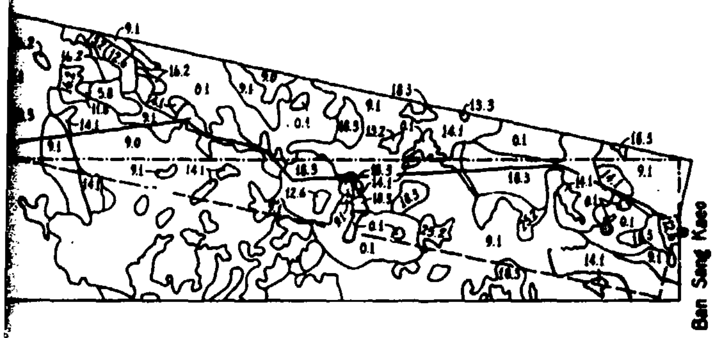
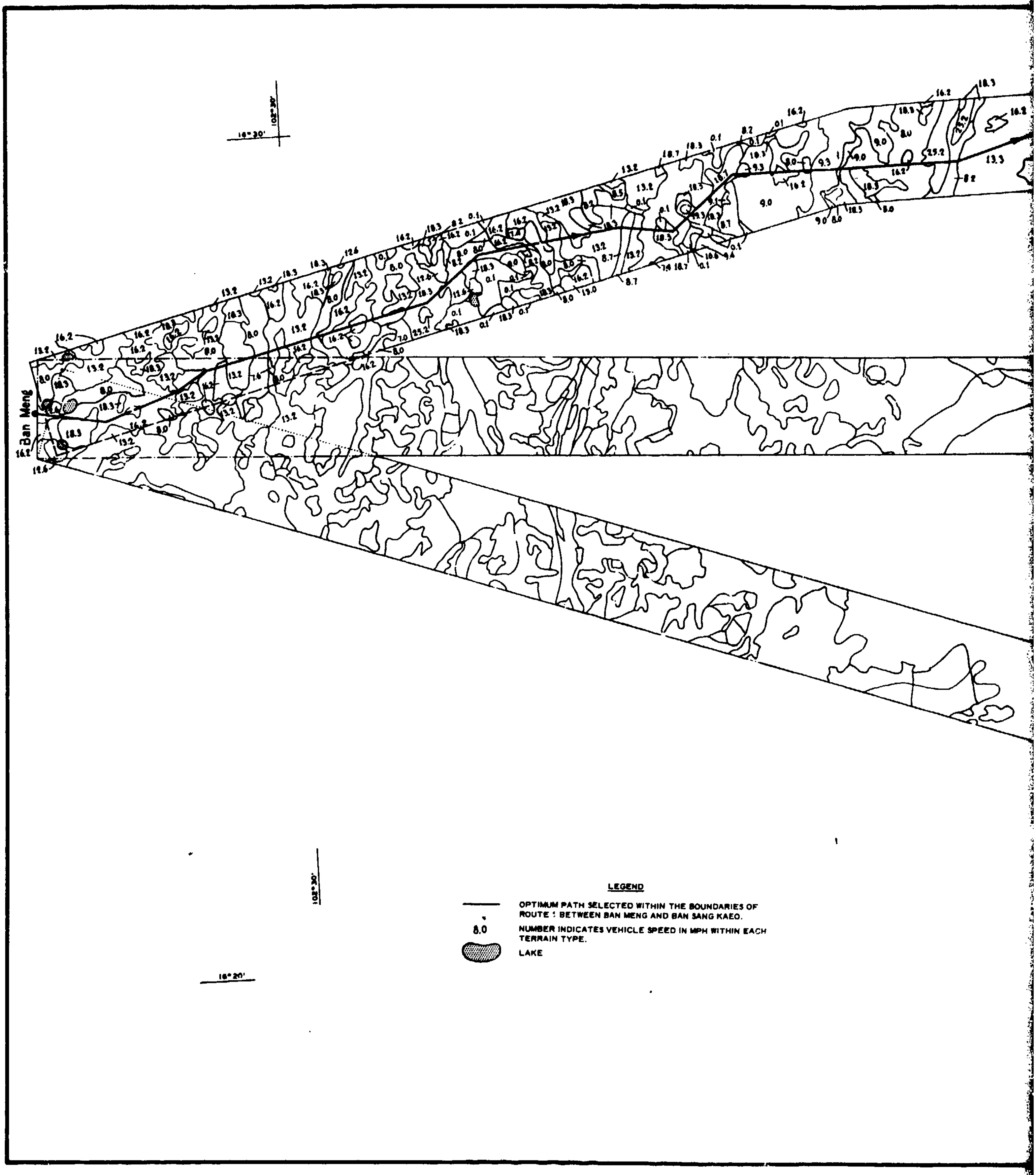
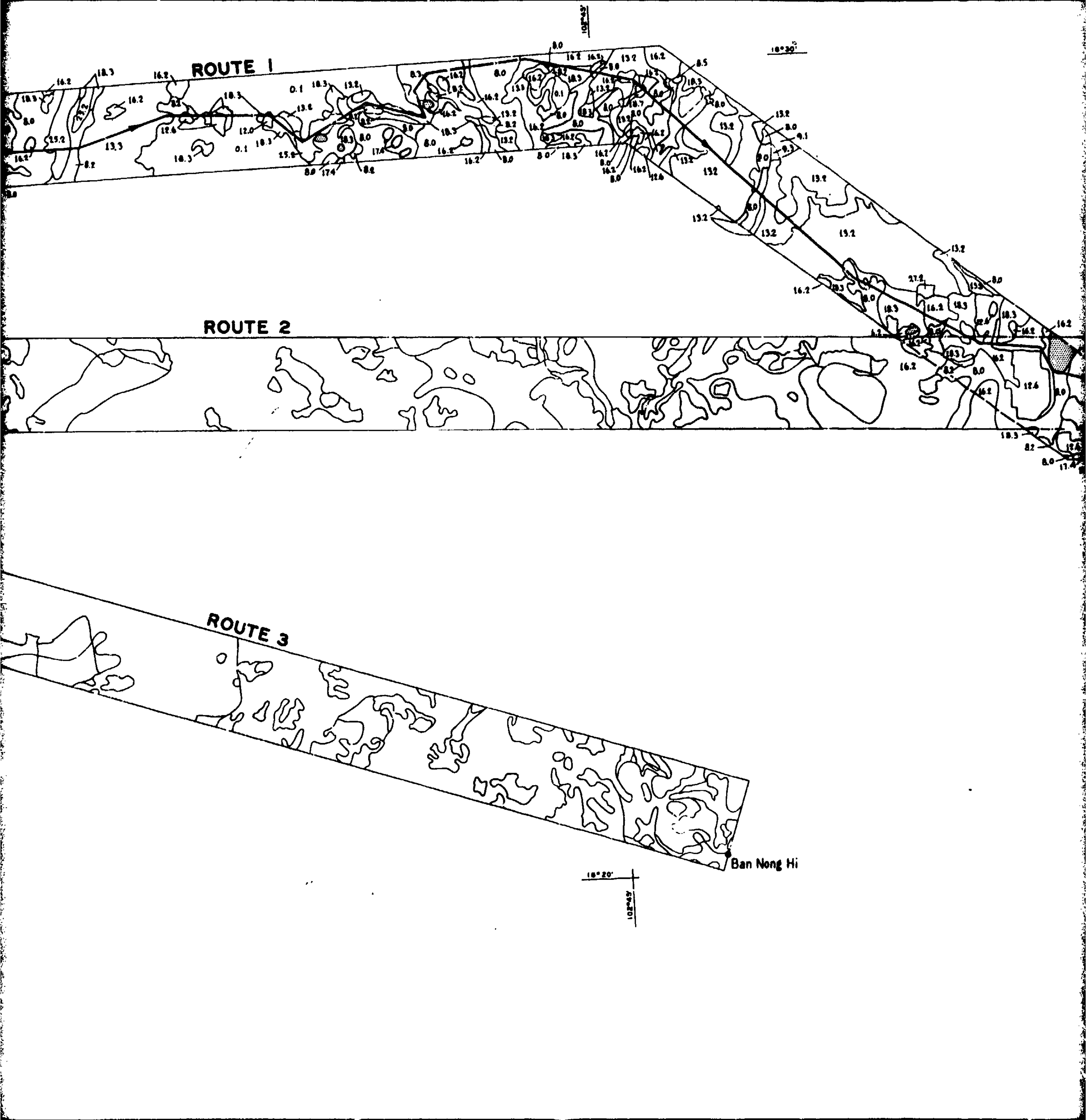


Plate 8


Ban Meng
16°30'
102°30'
16°20'
LEGEND
OPTIMUM PATH SELECTED WITHIN THE BOUNDARIES OF ROUTE 1 BETWEEN BAN MENG AND BAN SANG KAEO.
8.0 NUMBER INDICATES VEHICLE SPEED IN MPH WITHIN EACH TERRAIN TYPE.
LAKE

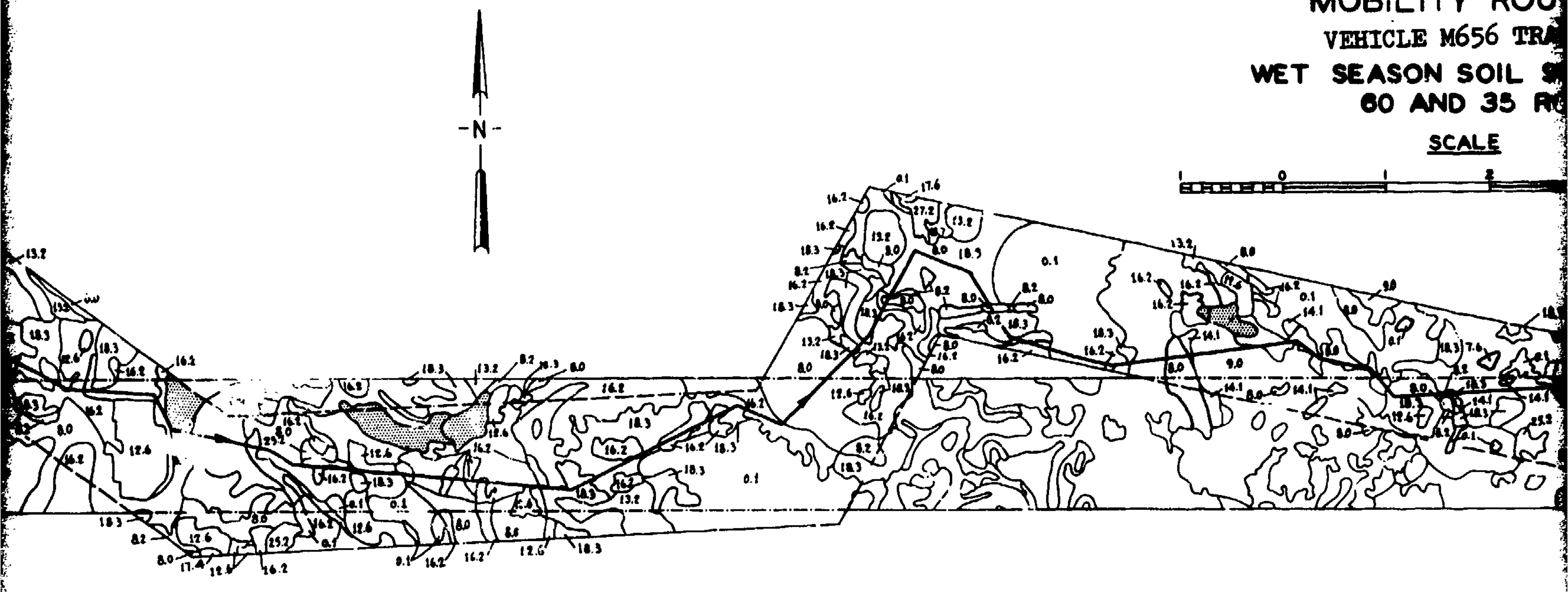
2



3

KHON KAEN CROSS-
MOBILITY ROU
VEHICLE M656 TRA
WET SEASON SOIL S
60 AND 35 R

SCALE



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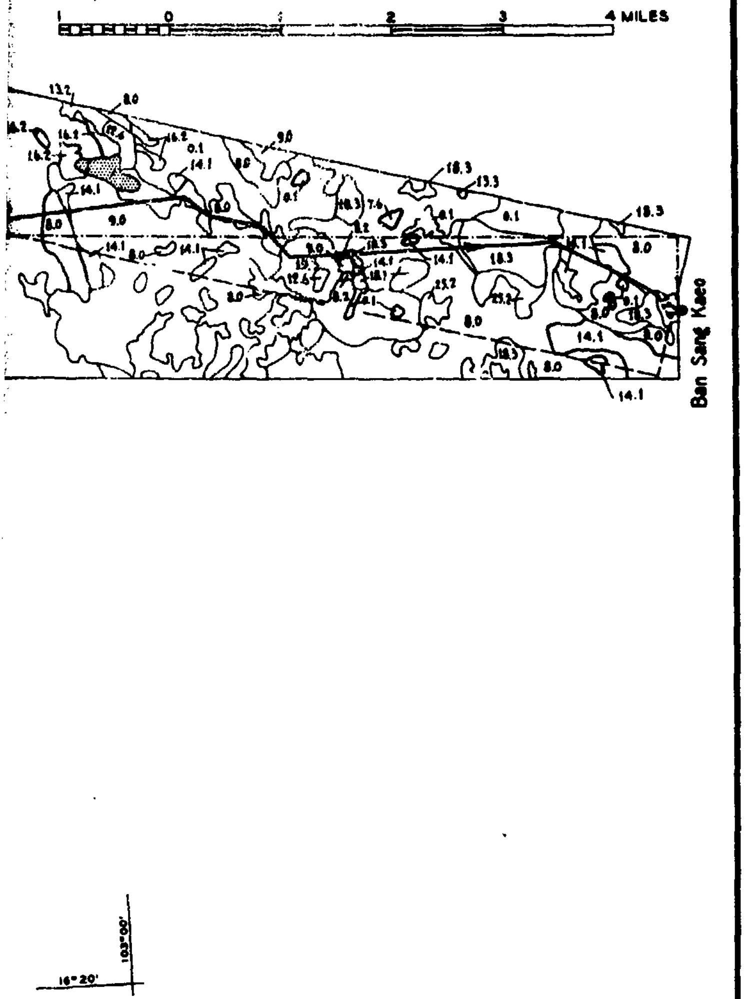
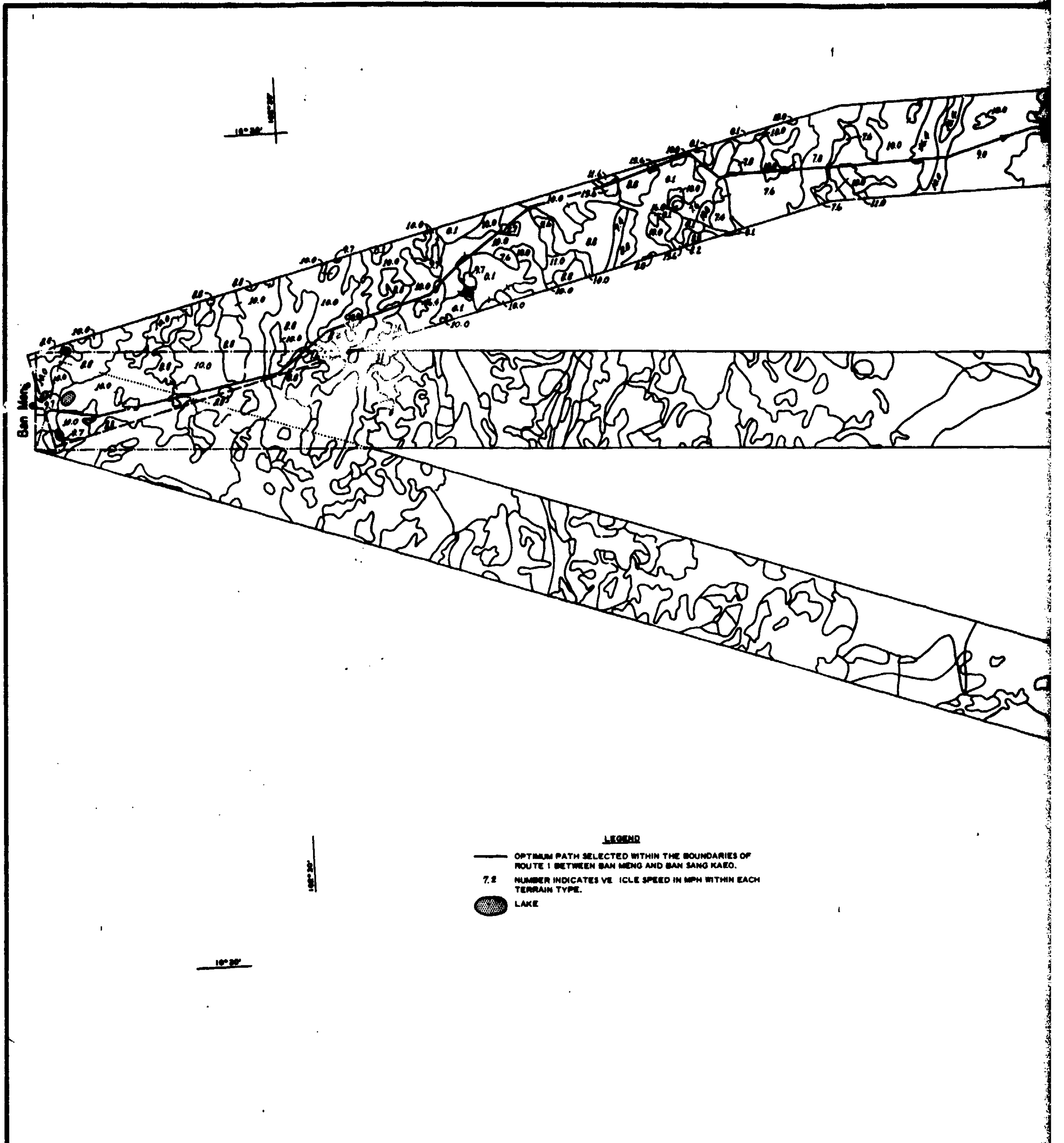
KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

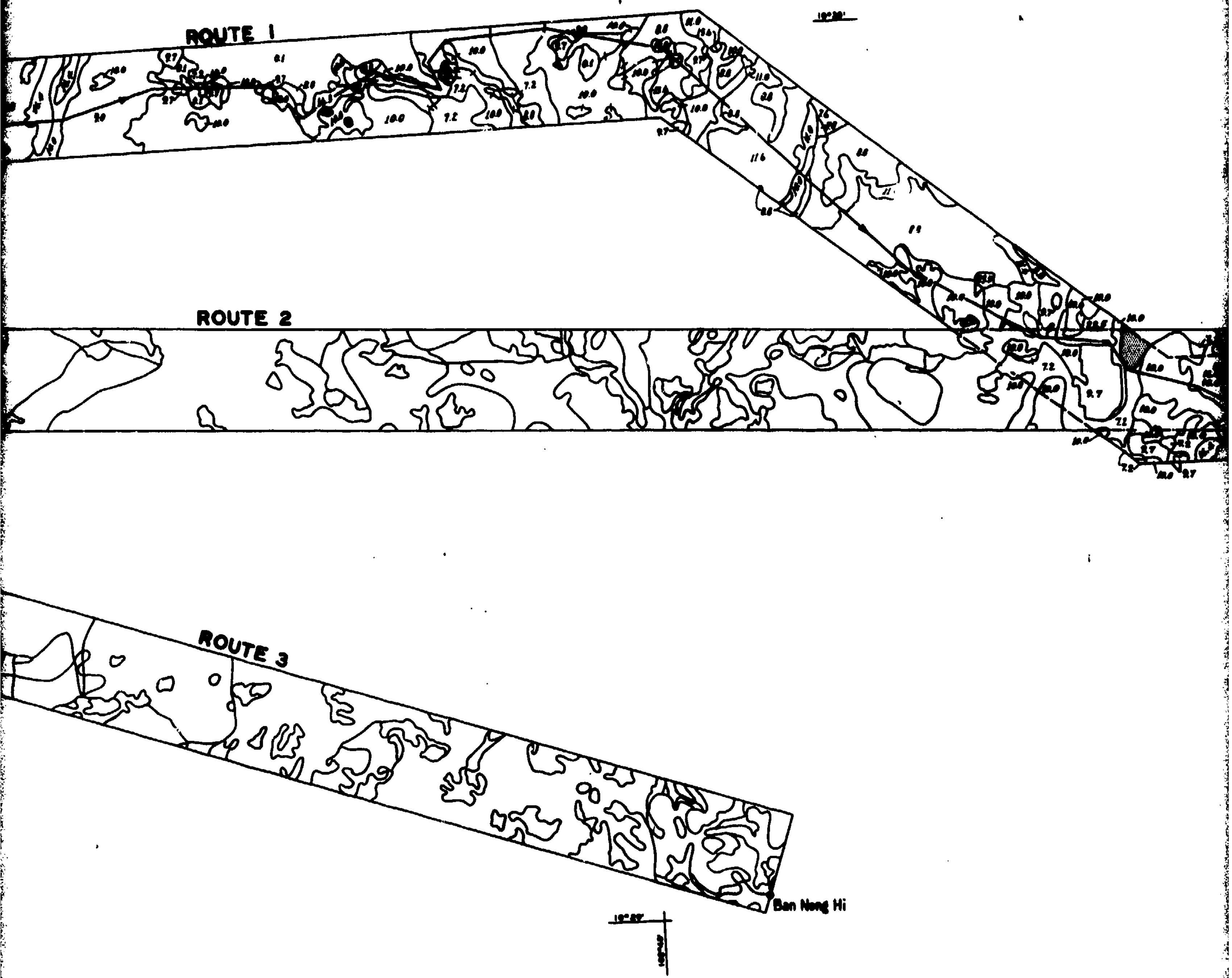
VEHICLE M656 TRAVERSE

WET SEASON SOIL STRENGTH 60 AND 35 RCI

SCALE




Ban Meng
LEGEND
OPTIMUM PATH SELECTED WITHIN THE BOUNDARIES OF ROUTE 1 BETWEEN BAN MENG AND BAN SANG KAEO.
7.2 NUMBER INDICATES VE ICLE SPEED IN MPH WITHIN EACH TERRAIN TYPE.
LAKE

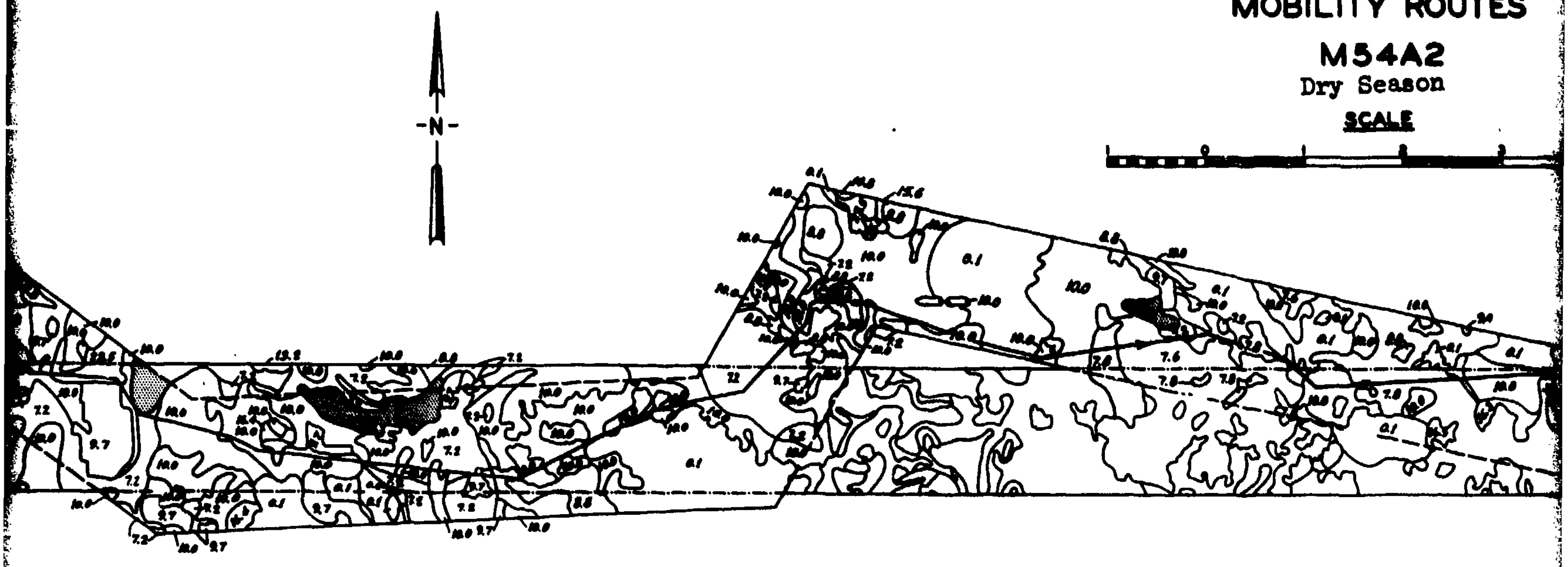


ROUTE 1
ROUTE 2
ROUTE 3
Ban Nong Hi

KHON KAEN CROSS-COUN
MOBILITY ROUTES

M54A2

Dry Season



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KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

M54A2

Dry Season

SCALE

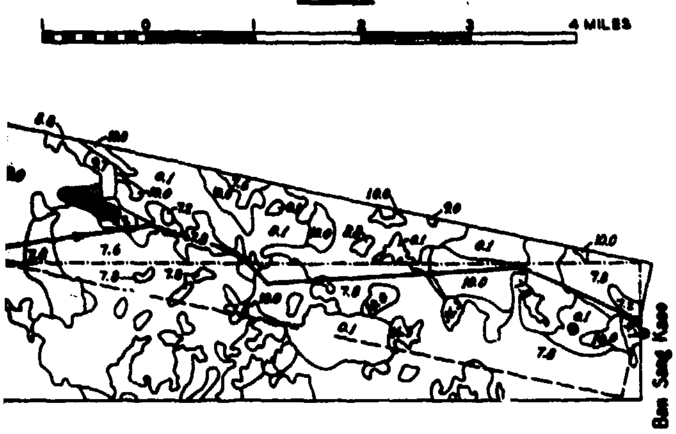
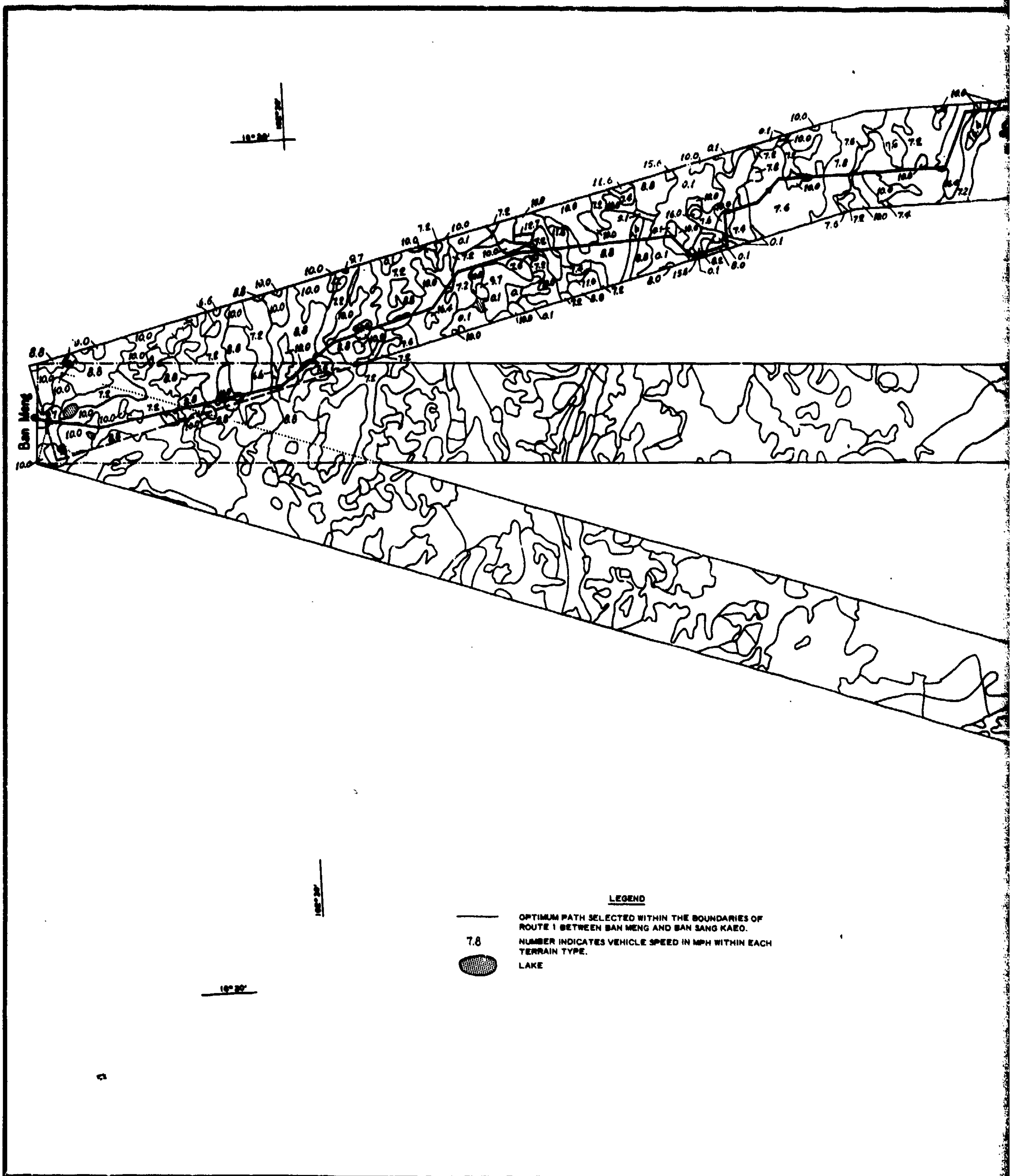
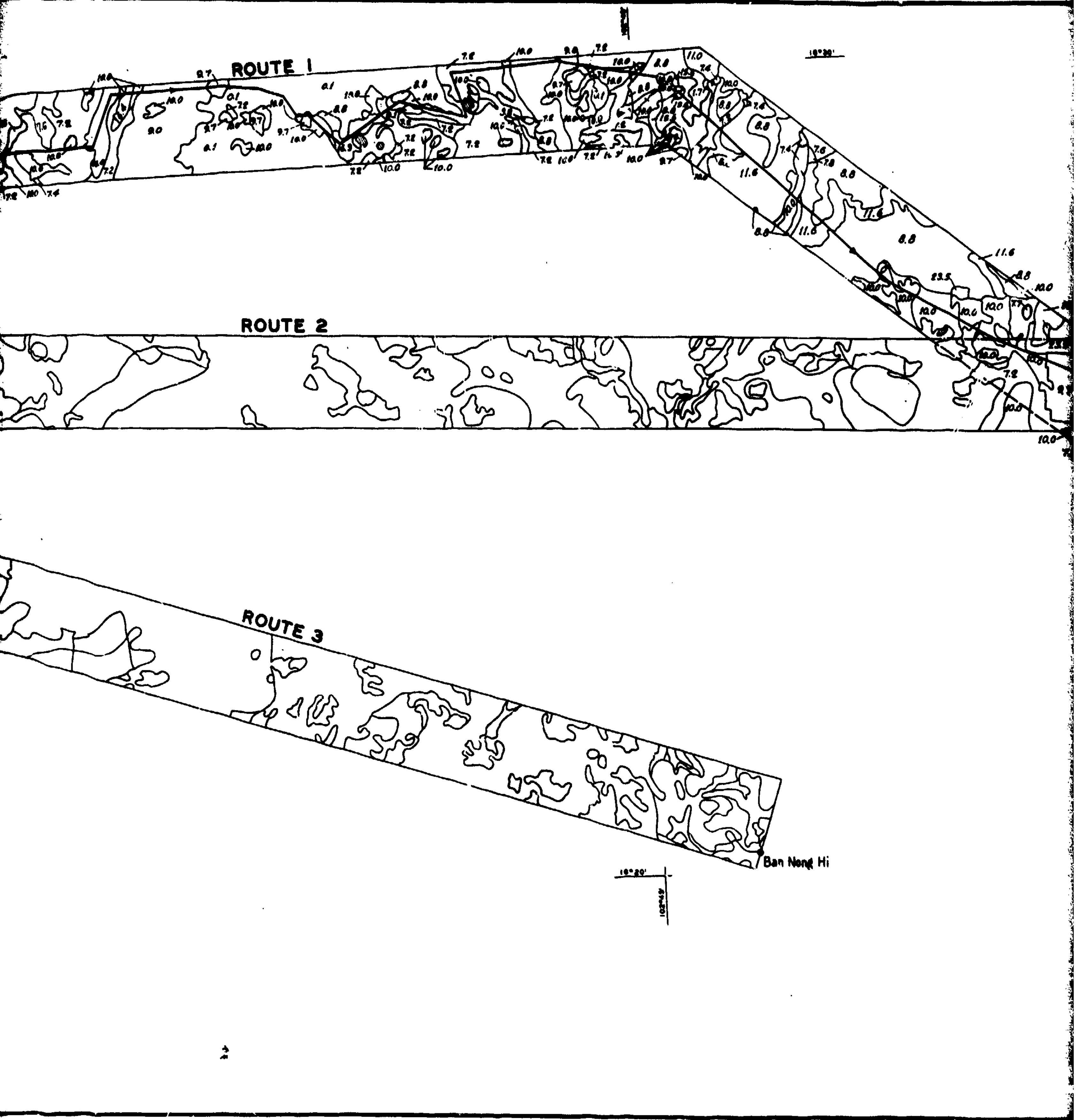


Plate 10


Ban Meng
LEGEND
OPTIMUM PATH SELECTED WITHIN THE BOUNDARIES OF ROUTE 1 BETWEEN BAN MENG AND BAN SANG KAEO.
7.8
NUMBER INDICATES VEHICLE SPEED IN MPH WITHIN EACH TERRAIN TYPE.
LAKE

2 1



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KHON KAEN CRO

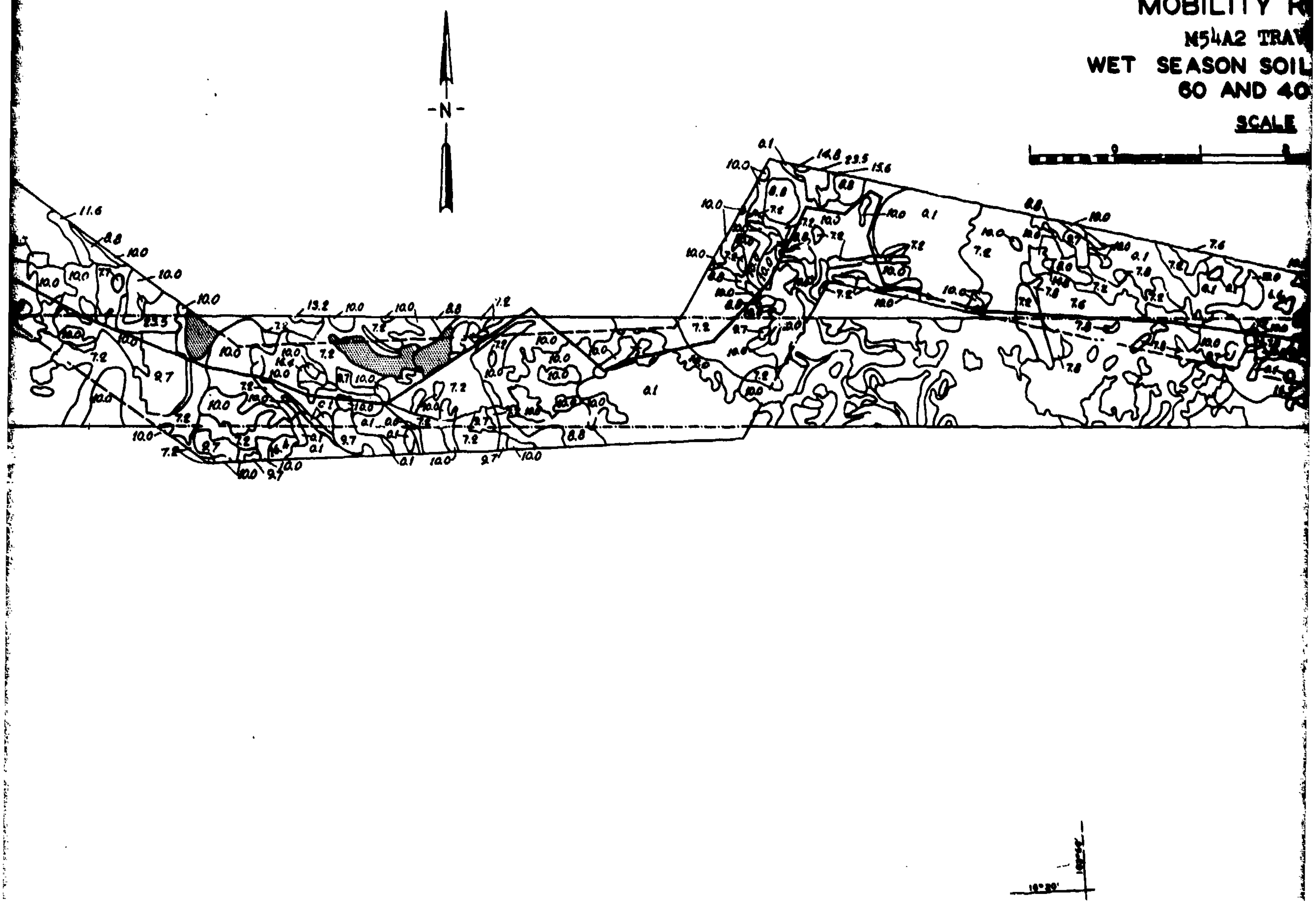
MOBILITY R

M54A2 TRA

WET SEASON SOIL

60 AND 40

SCALE



4

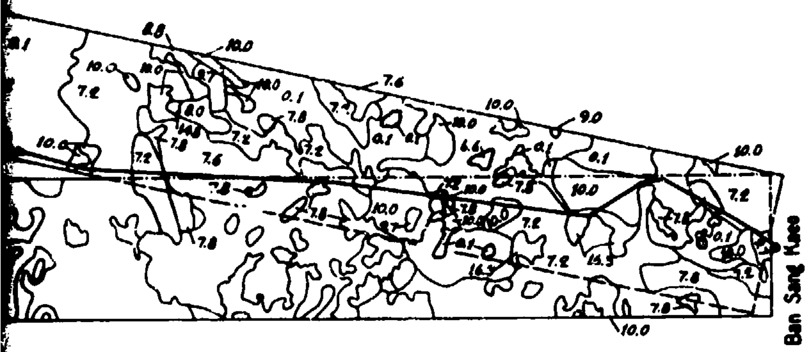
KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

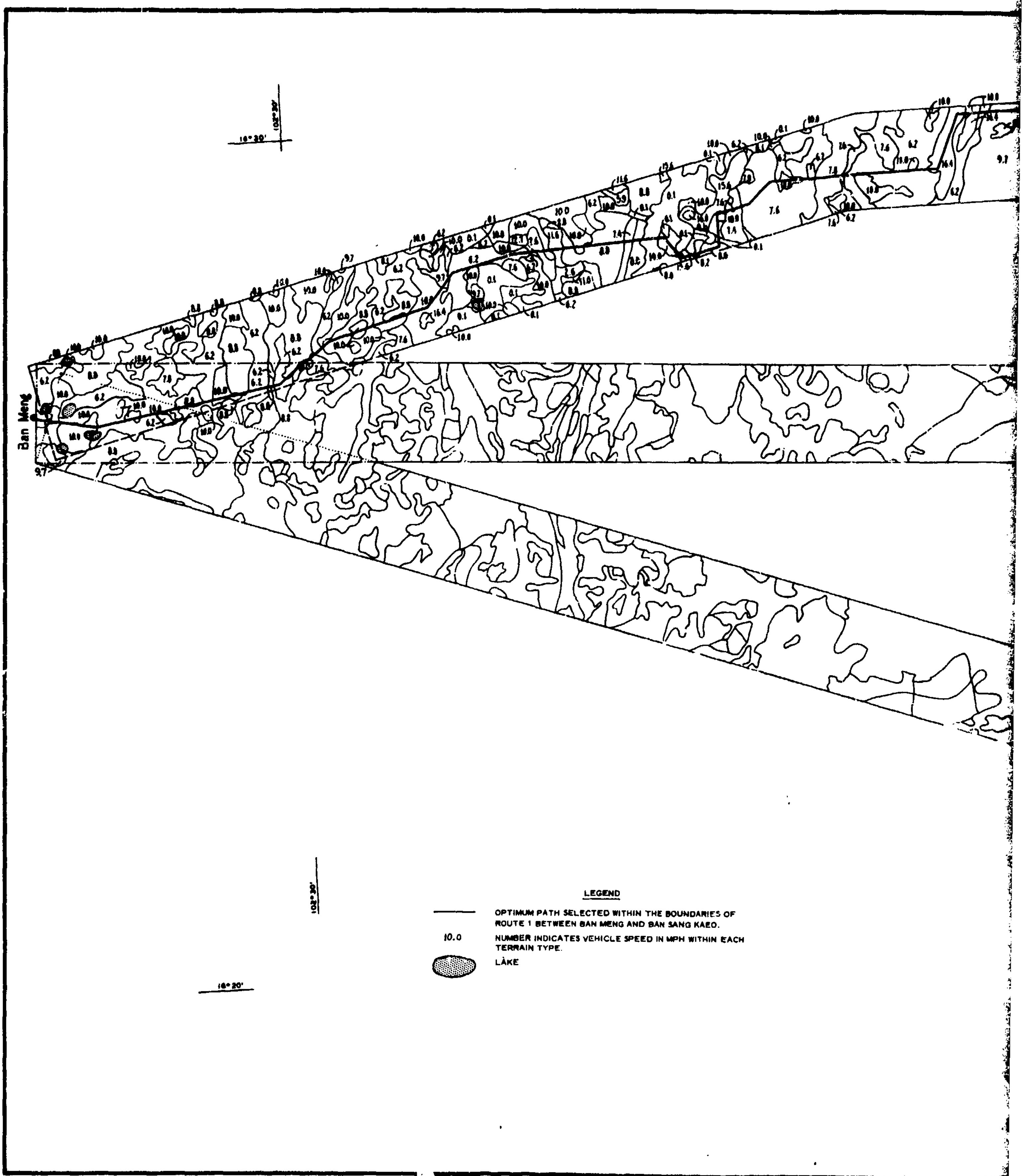
M54A2 TRAVERSE

WET SEASON SOIL STRENGTH
60 AND 40 RCI

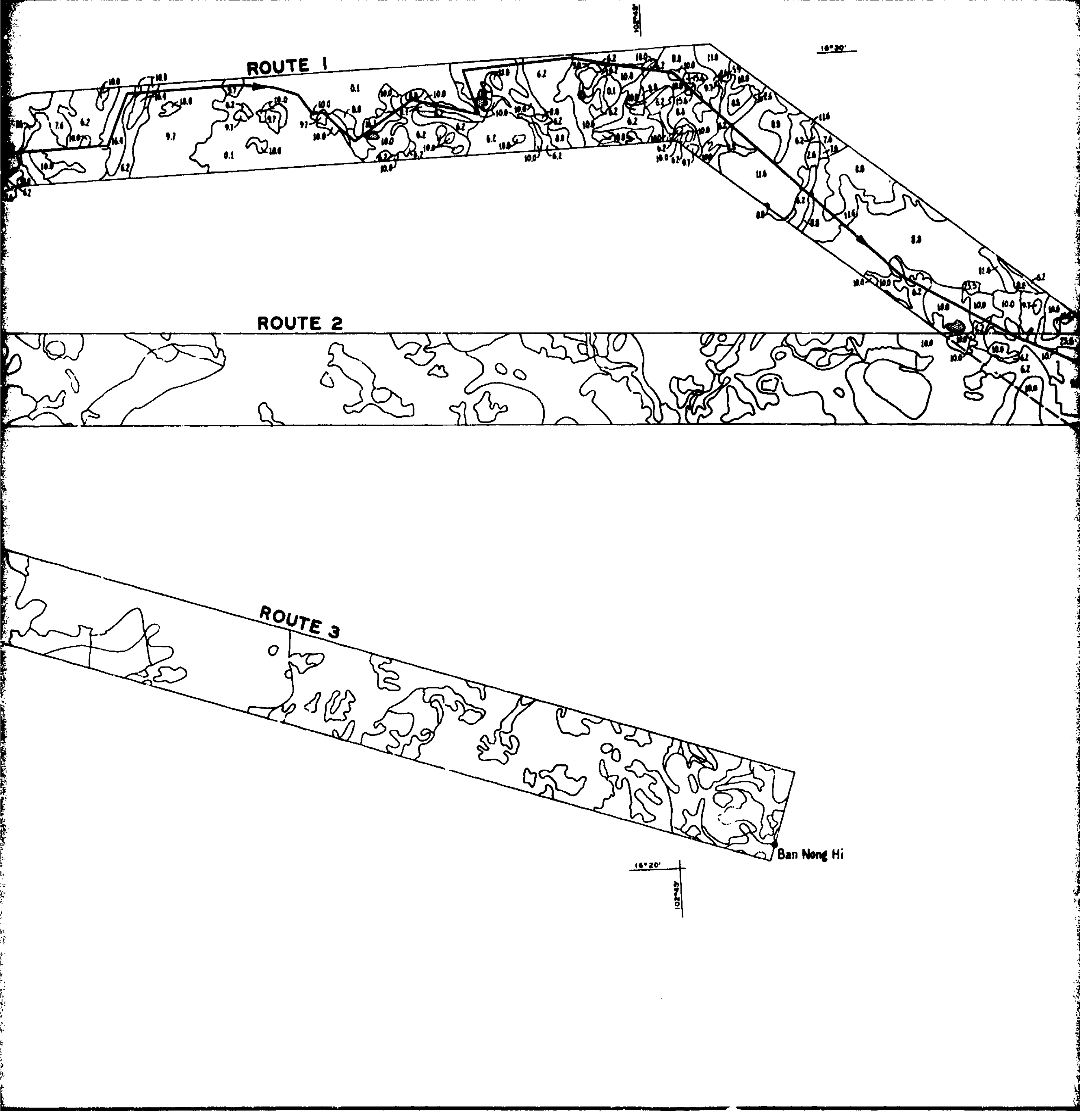
SCALE

1 0 1 2 3 4 MILES

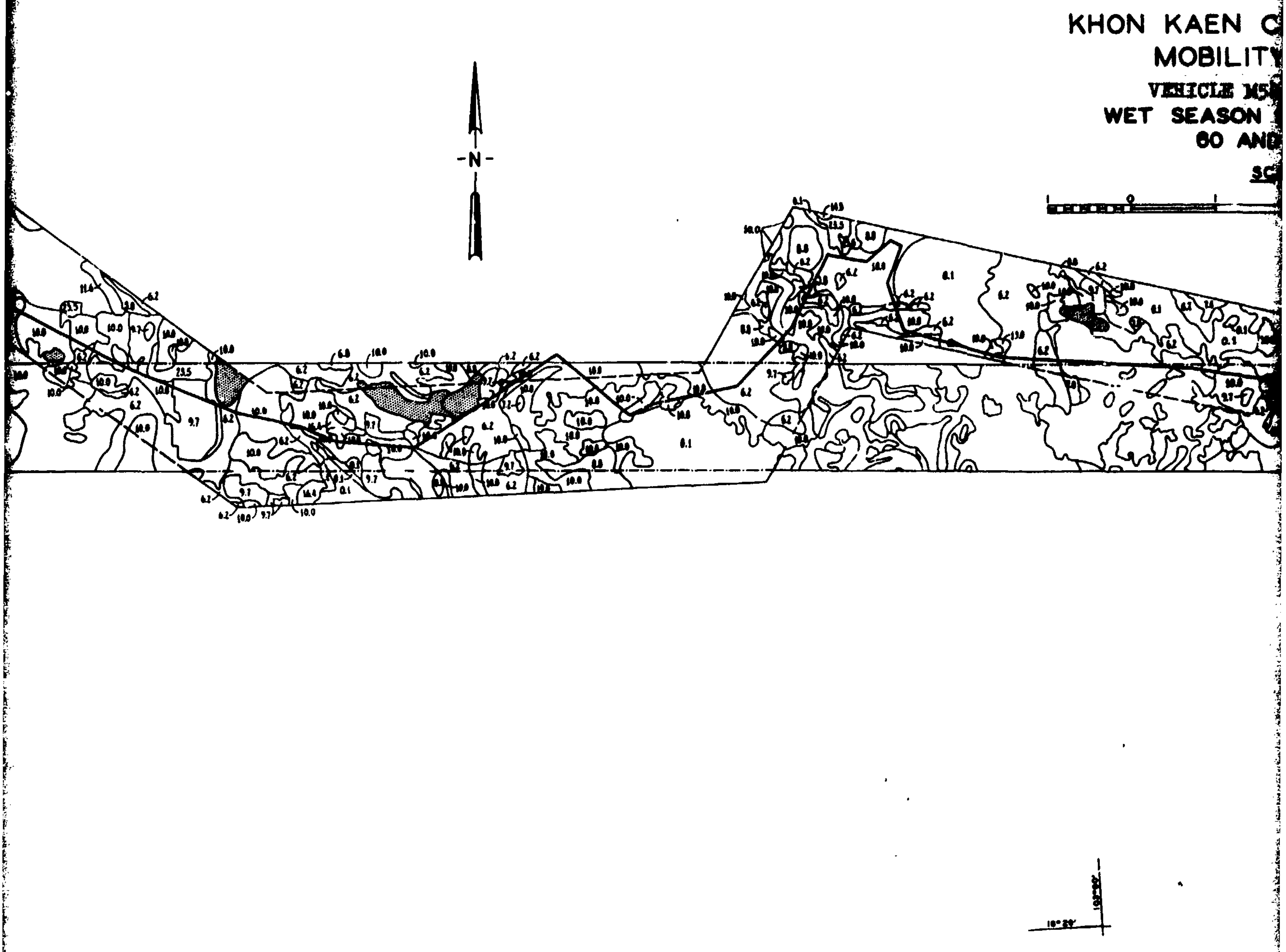



16°30'
102°30'
Ban Meng
16°20'
102°30'
LEGEND
OPTIMUM PATH SELECTED WITHIN THE BOUNDARIES OF ROUTE 1 BETWEEN BAN MENG AND BAN SANG KAEO.
10.0 NUMBER INDICATES VEHICLE SPEED IN MPH WITHIN EACH TERRAIN TYPE.
LAKE

2 1



3 1



4

KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

VEHICLE M54A2 TRAVERSE

WET SEASON SOIL STRENGTH

60 AND 35 RCI

SCALE

1 0 1 2 3 4 MILES

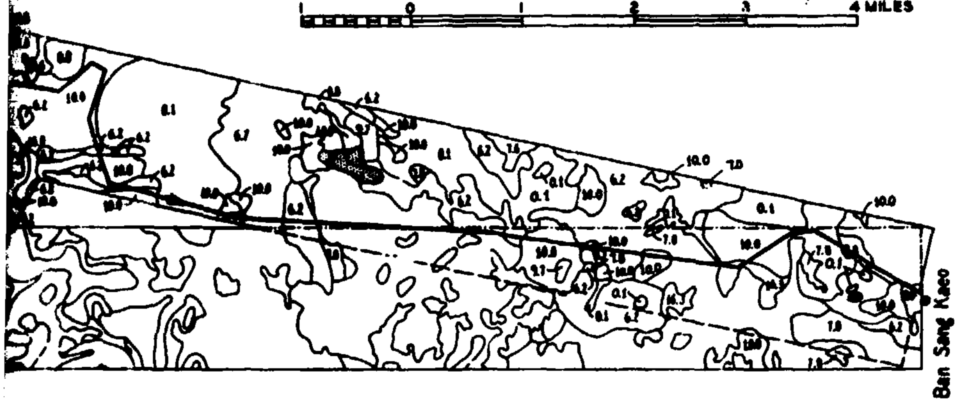
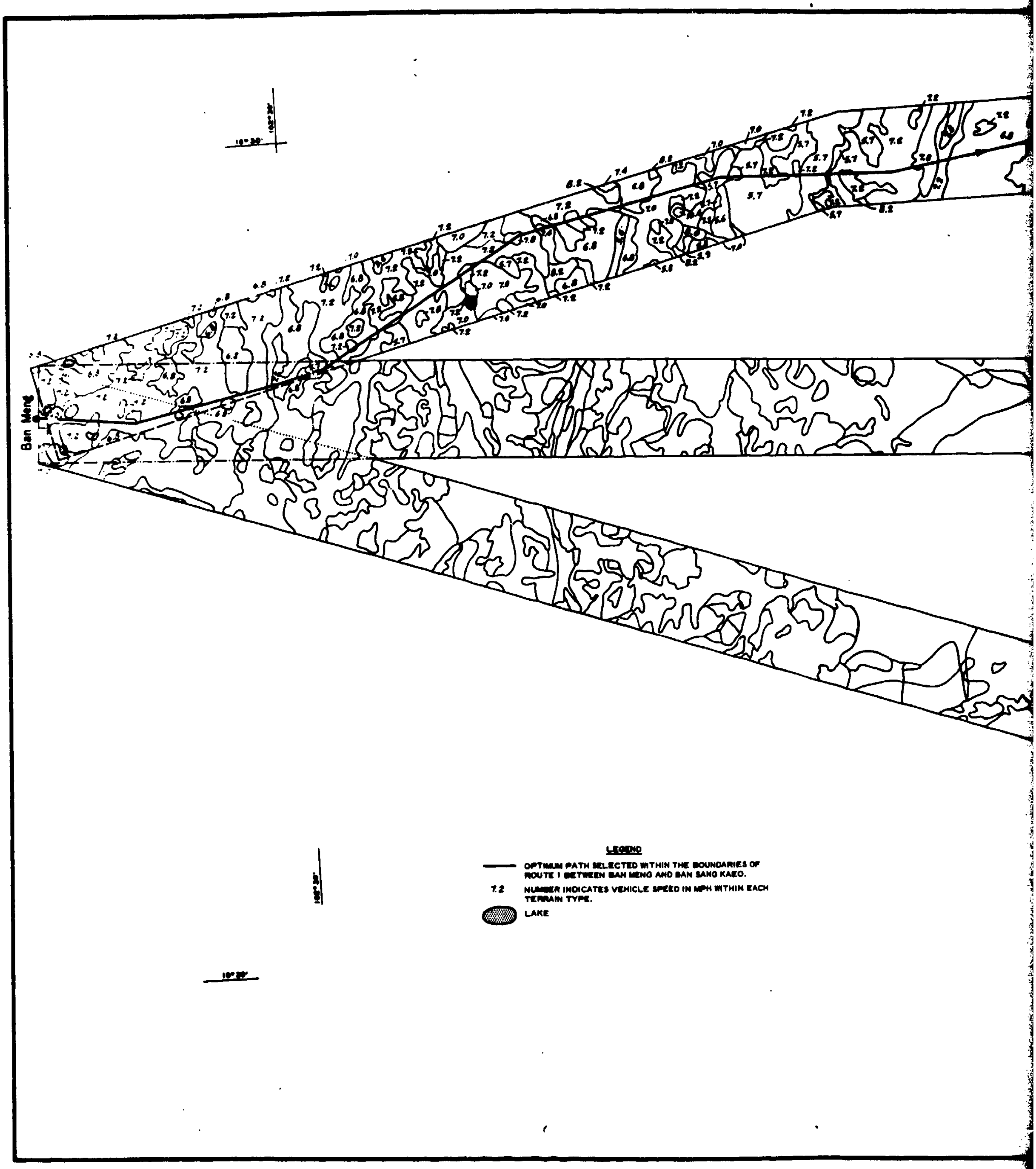
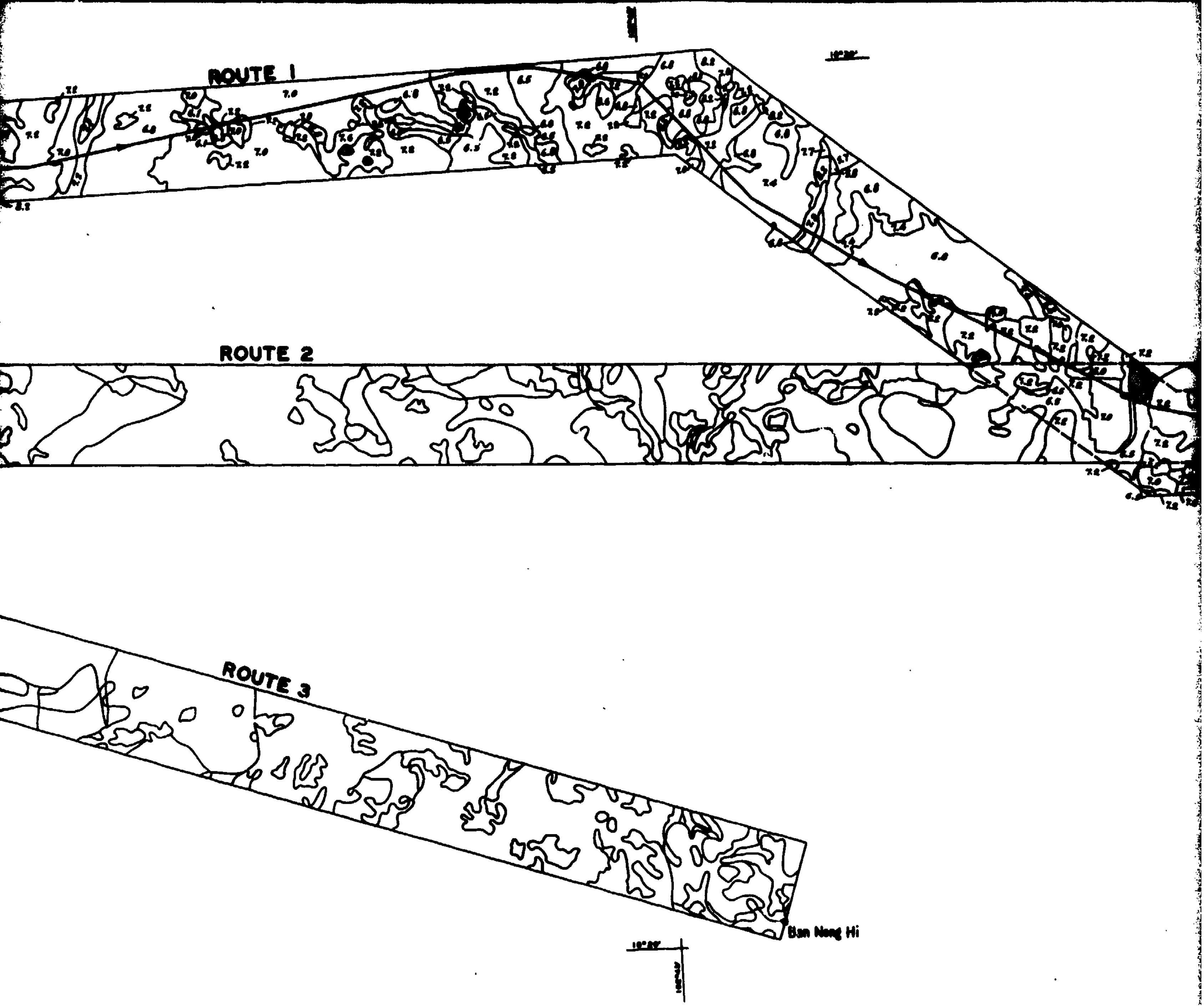


PLATE 12


Ban Meng
LEGEND
OPTIMUM PATH SELECTED WITHIN THE BOUNDARIES OF ROUTE 1 BETWEEN BAN MENG AND BAN SANG KAEO.
7.2 NUMBER INDICATES VEHICLE SPEED IN MPH WITHIN EACH TERRAIN TYPE.
LAKE

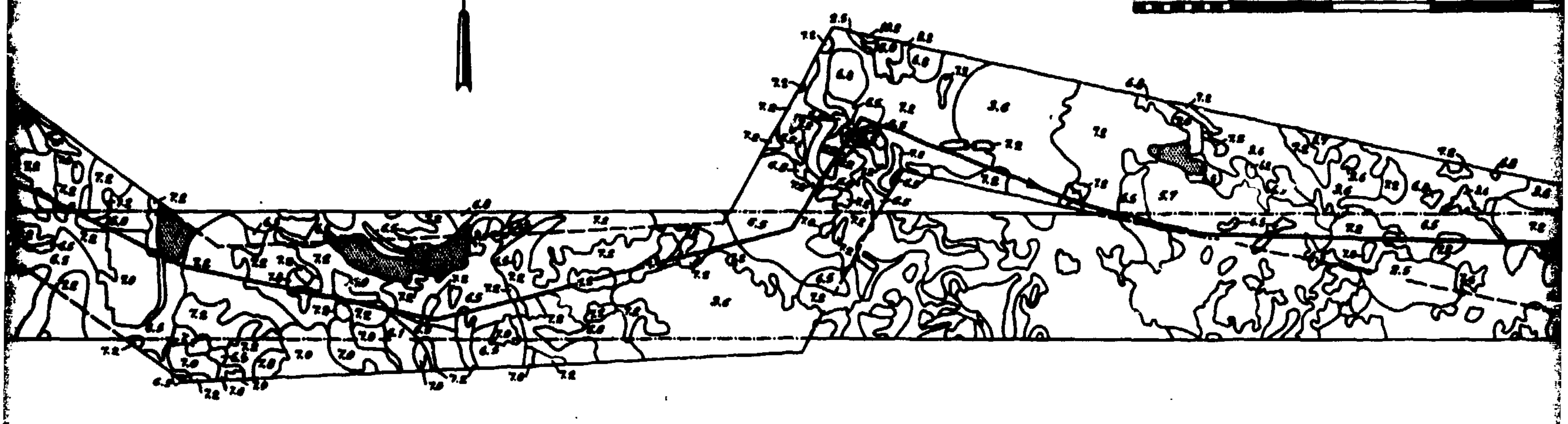
2



3

KHON KAEN CROSS-CO
MOBILITY ROUTES
M520
Dry Season

SCALE



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KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

M520

Dry Season

SCALE

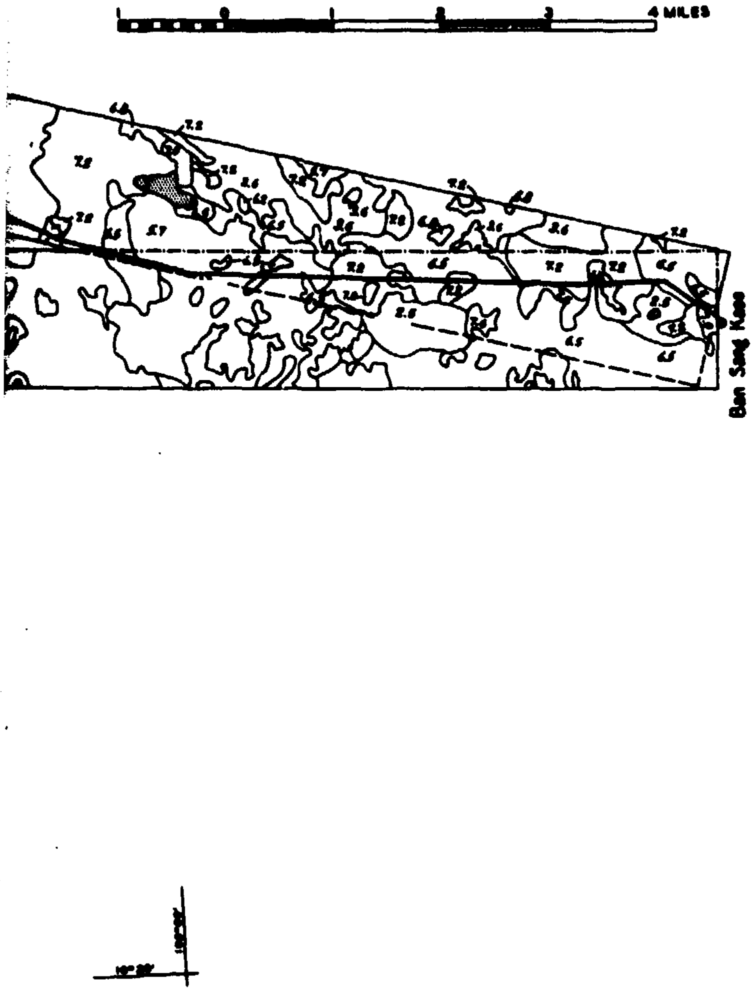
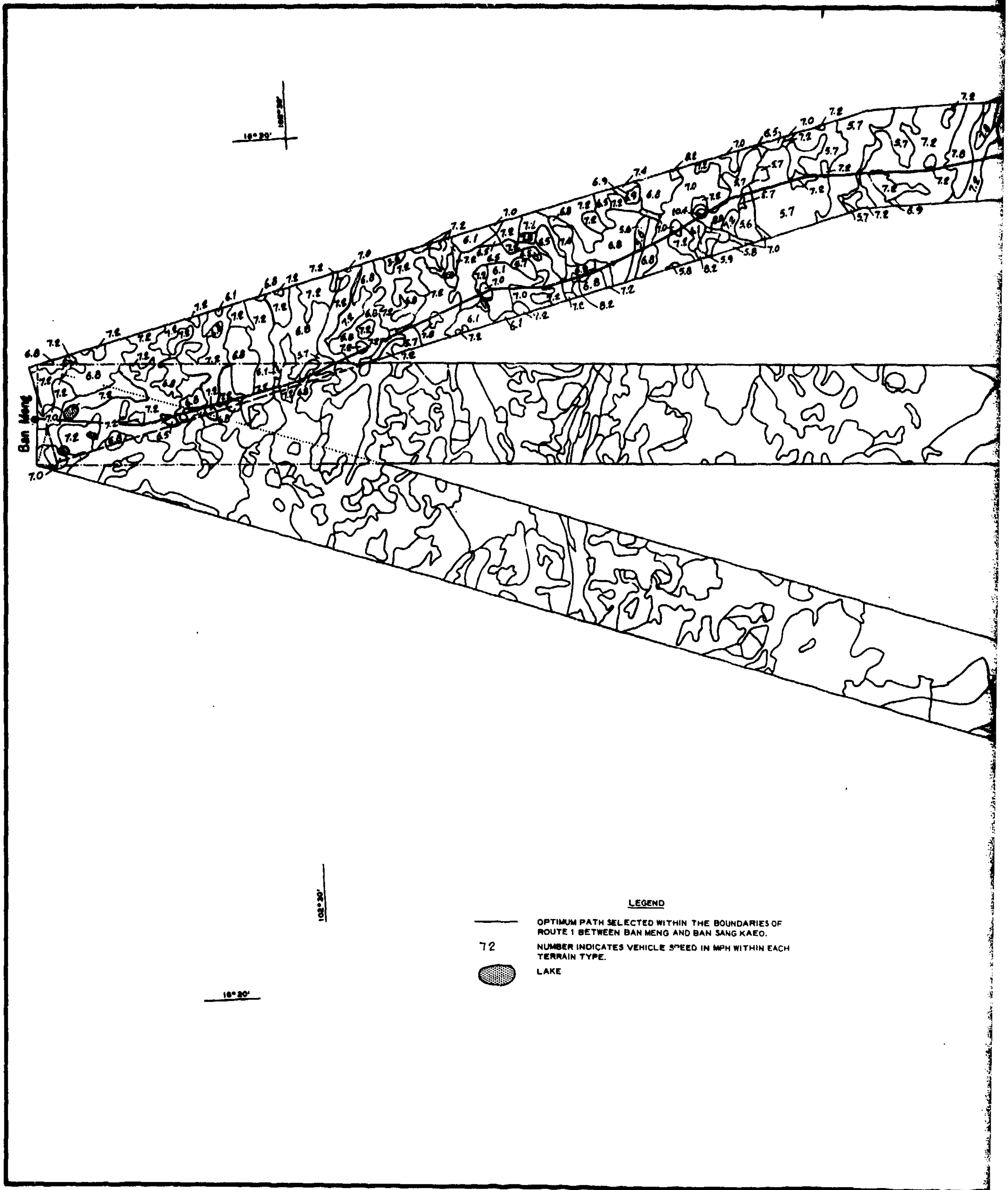
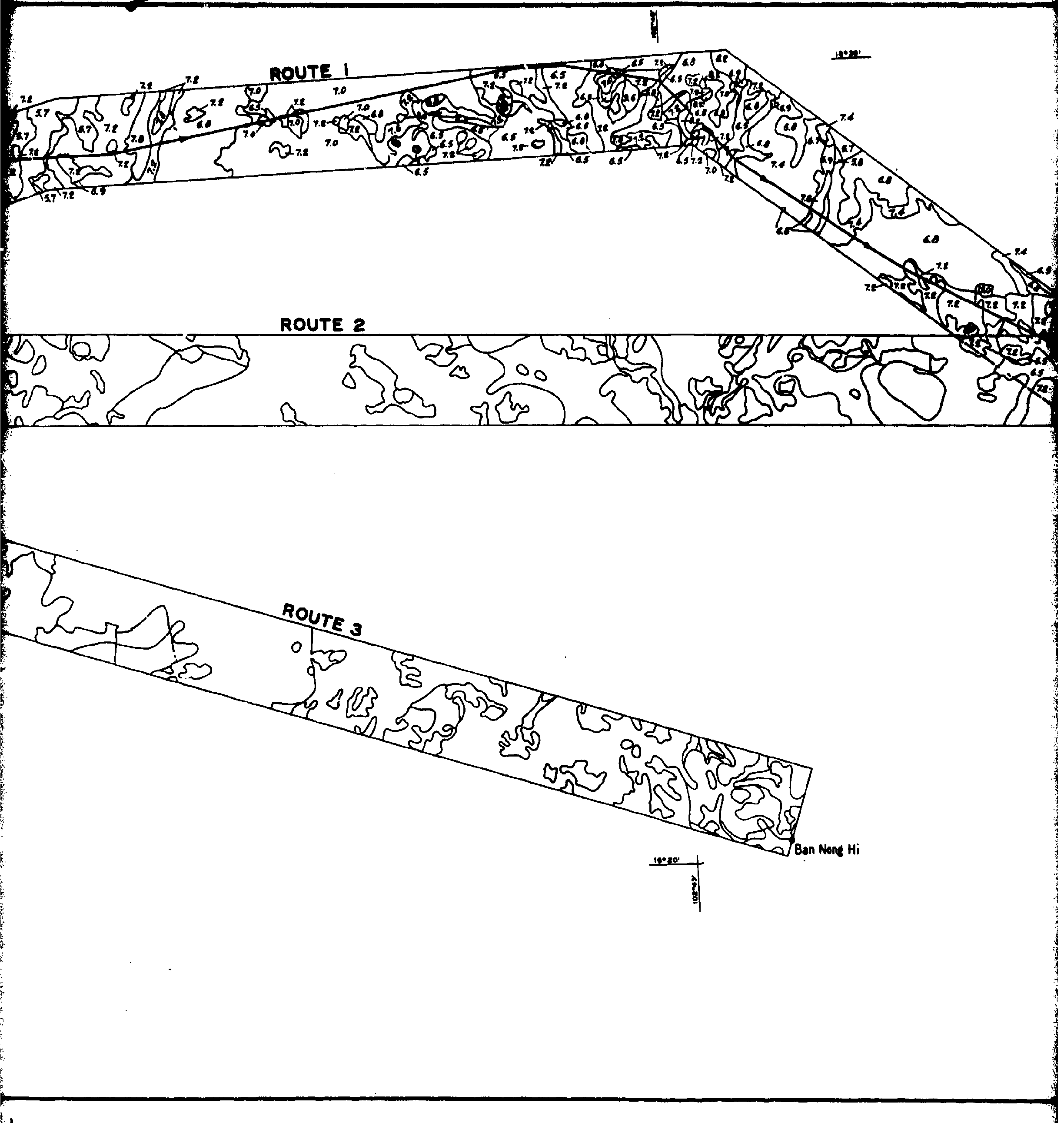


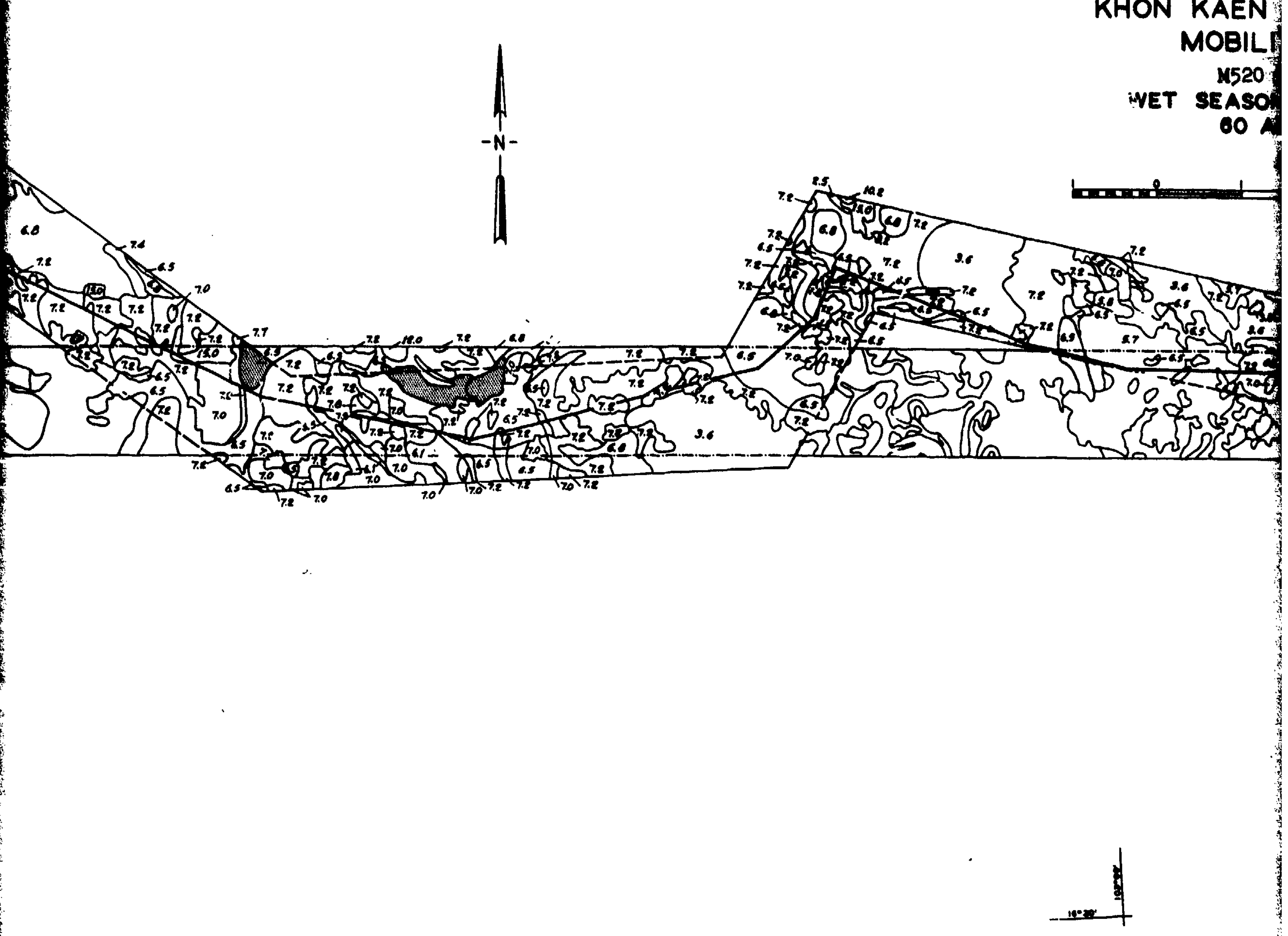
Plate 13



Ban Meng
16° 20'
102° 30'
LEGEND
OPTIMUM PATH SELECTED WITHIN THE BOUNDARIES OF ROUTE 1 BETWEEN BAN MENG AND BAN SANG KAEO.
72
NUMBER INDICATES VEHICLE SPEED IN MPH WITHIN EACH TERRAIN TYPE.
LAKE


ROUTE 1
ROUTE 2
ROUTE 3
Ban Nong Hi

3 1



4

KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

M520 TRAVERSE

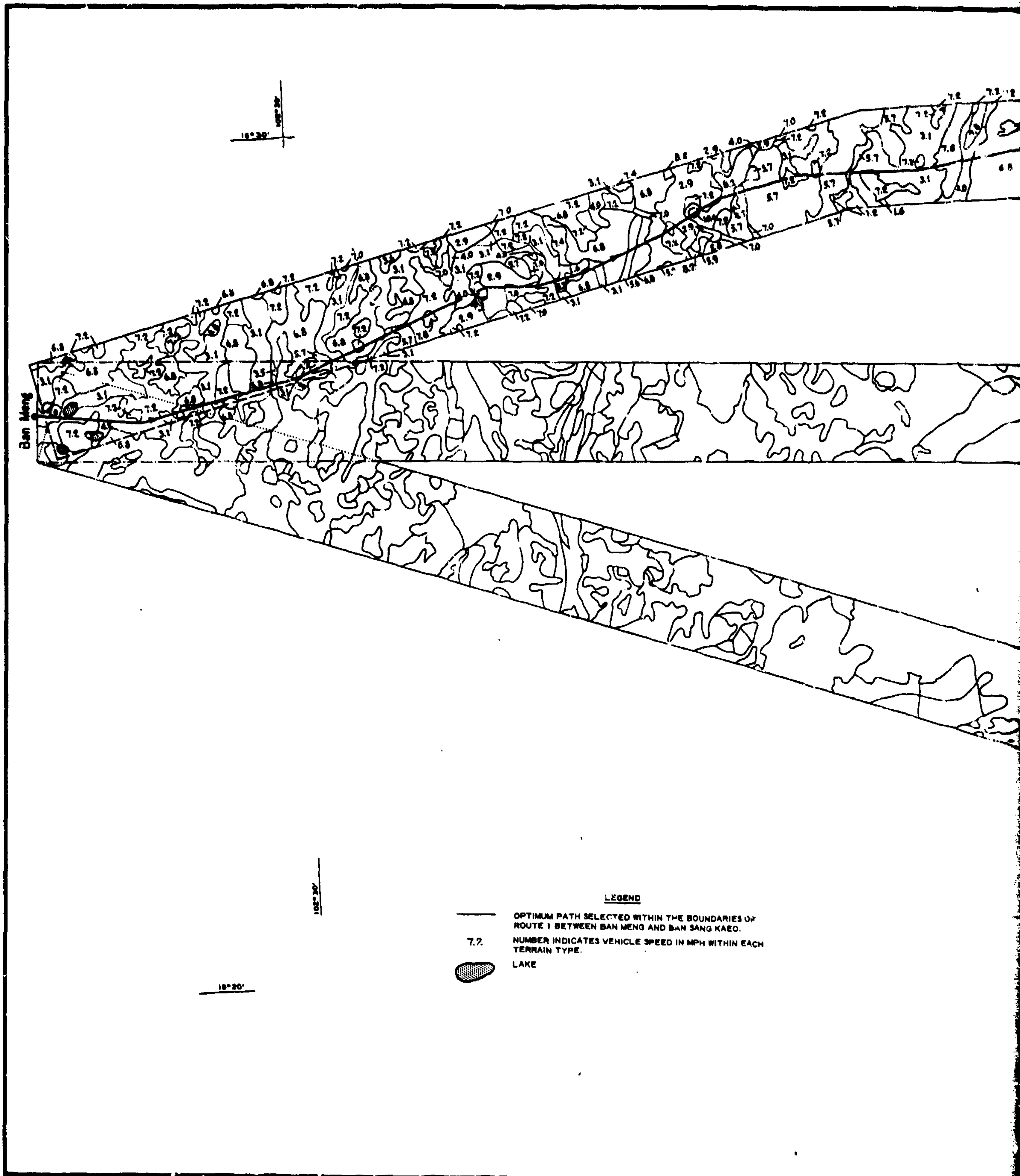
WET SEASON SOIL STRENGTH
60 AND 40 RCI

SCALE

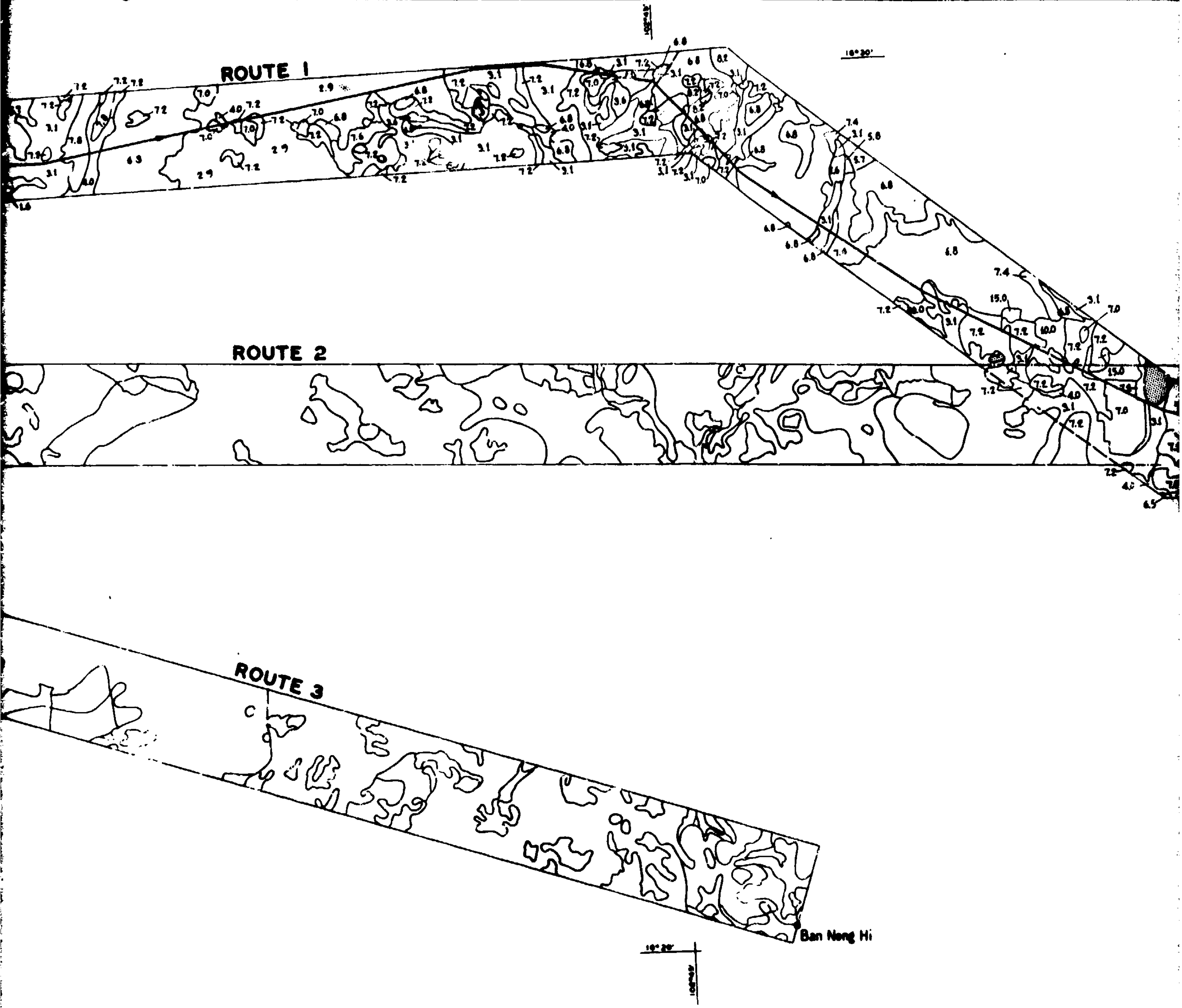
1 0 1 2 3 4 MILES

18°20'
102°00'

Plate 14


Ban Meng
16°30'
102°30'
102°30'
16°20'
LEGEND
OPTIMUM PATH SELECTED WITHIN THE BOUNDARIES OF ROUTE 1 BETWEEN BAN MENG AND BAN SANG KAEO.
7.2 NUMBER INDICATES VEHICLE SPEED IN MPH WITHIN EACH TERRAIN TYPE.
LAKE

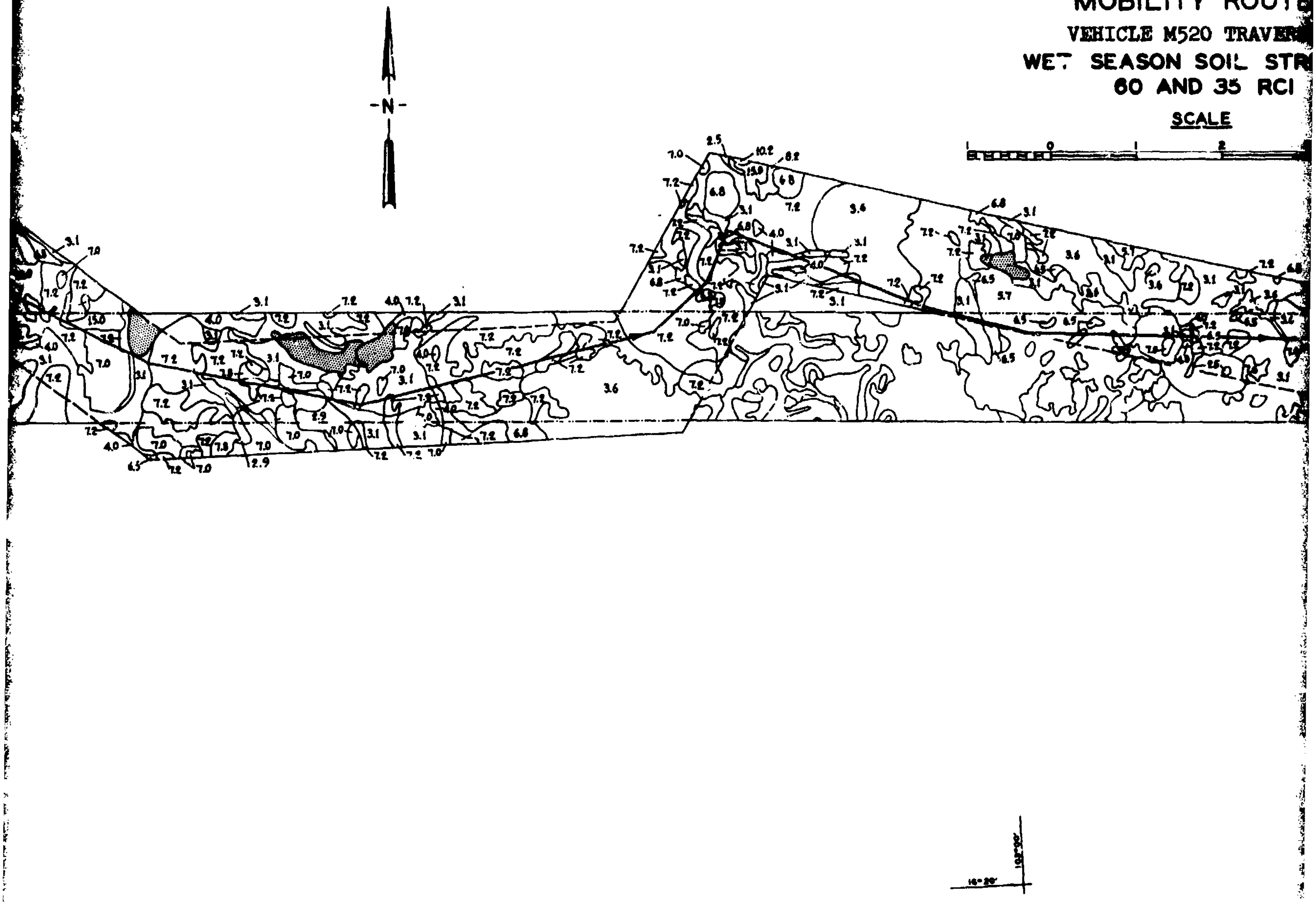
2



3

KHON KAEN CROSS-C
MOBILITY ROUTE

VEHICLE M520 TRAVER
WET SEASON SOIL STR
60 AND 35 RCI



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KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

VEHICLE M520 TRAVERSE

WET SEASON SOIL STRENGTH 60 AND 35 RCI

SCALE

1 0 1 2 3 4 MILES

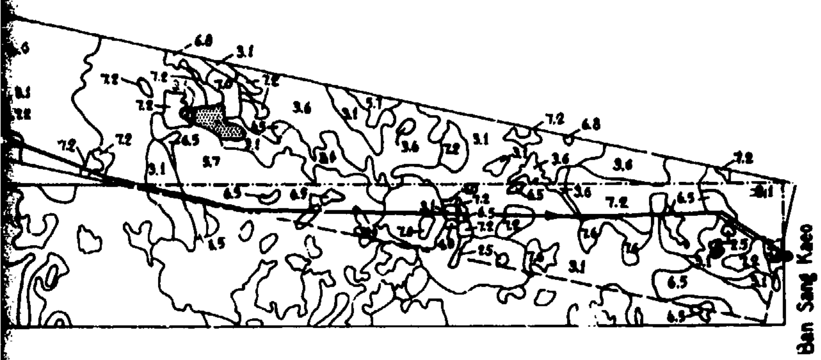
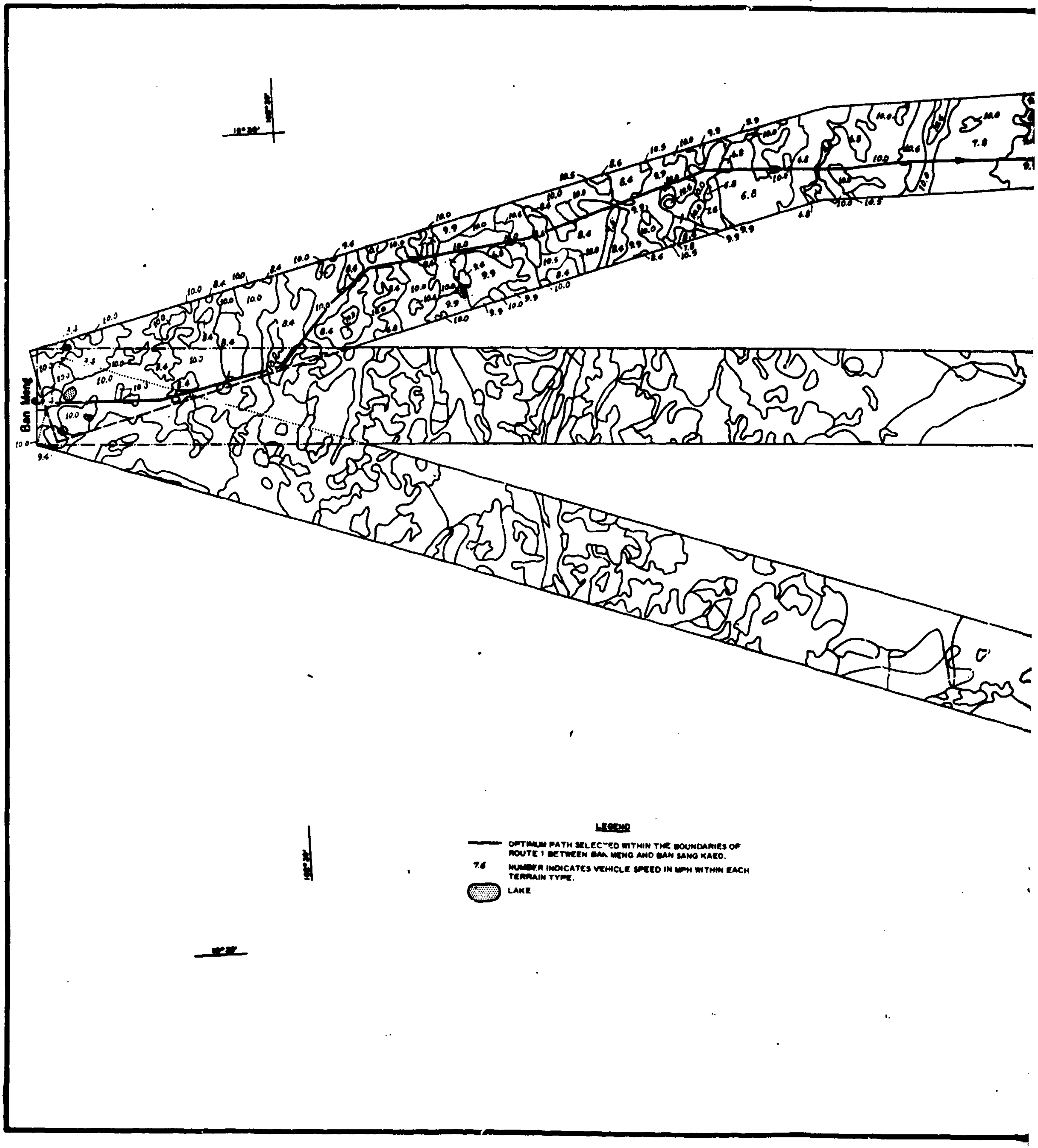
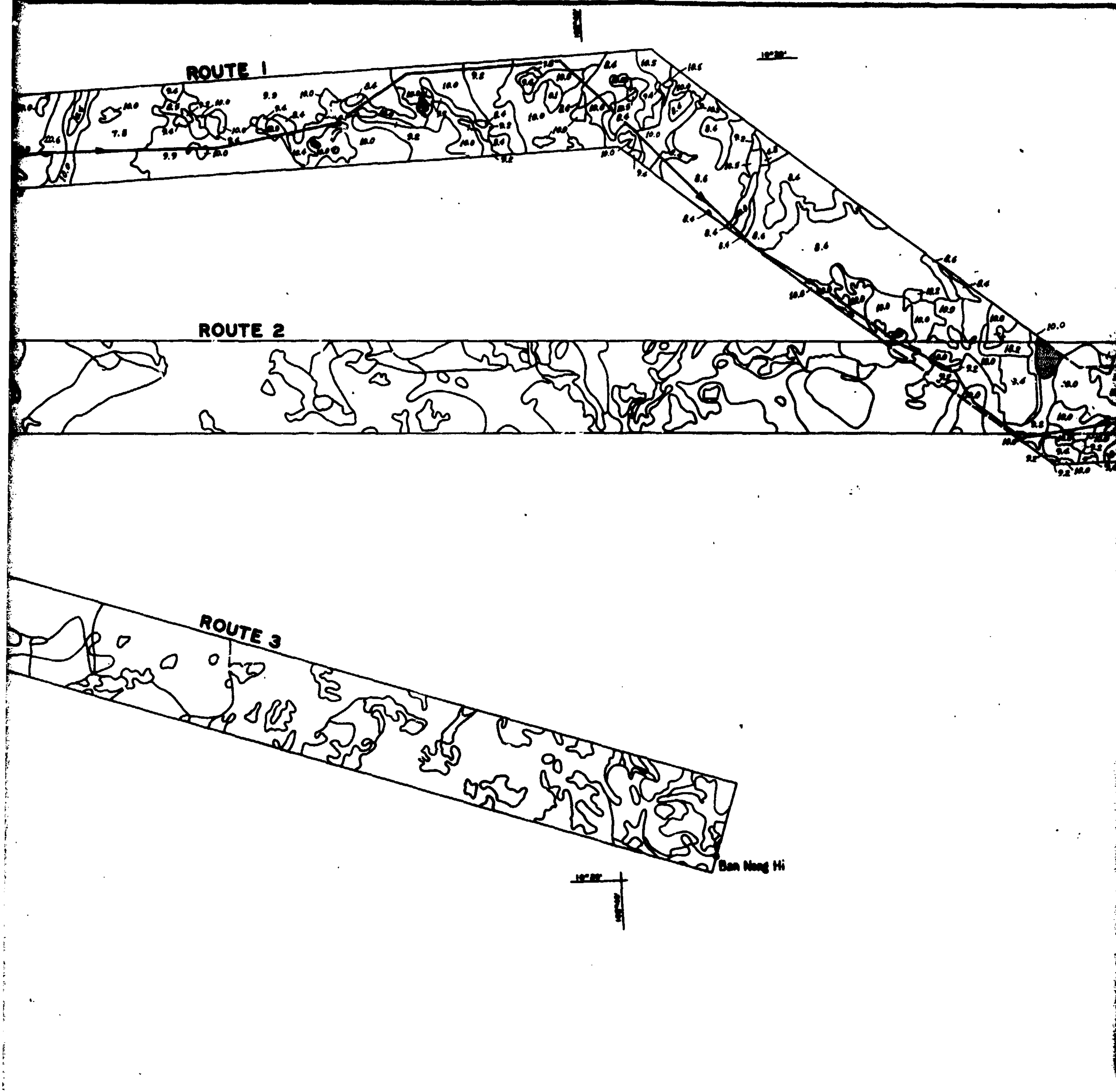


Plate 15


Ban Meng
LEGEND
OPTIMUM PATH SELECTED WITHIN THE BOUNDARIES OF ROUTE 1 BETWEEN BAN MENG AND BAN SANG KAEO.
7.6 NUMBER INDICATES VEHICLE SPEED IN MPH WITHIN EACH TERRAIN TYPE.
LAKE

2



3

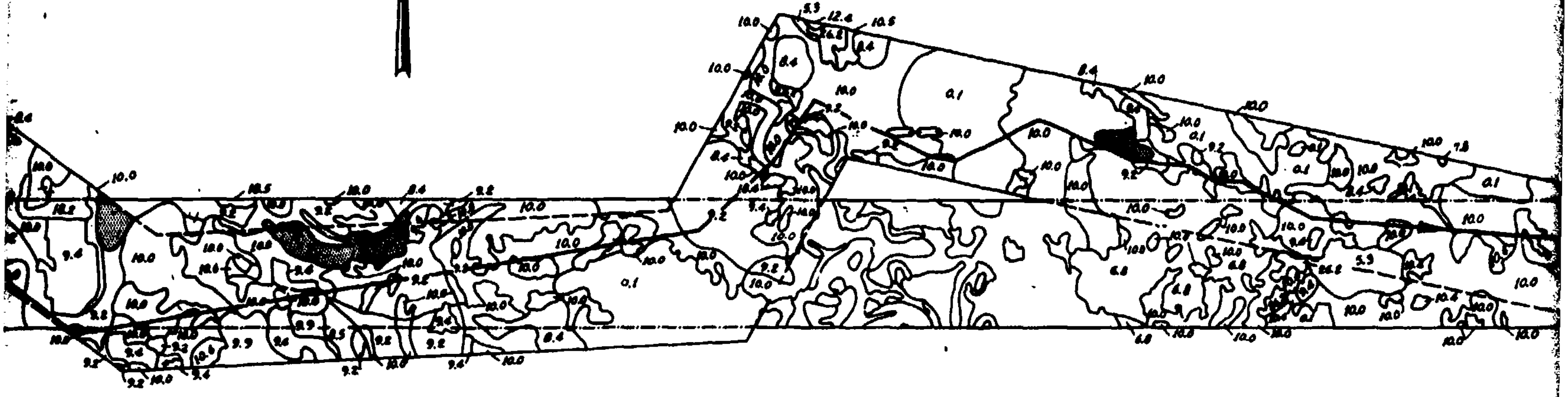
KHON KAEN CROSS-COUNT

MOBILITY ROUTES

M548

DRY SEASON

SCALE



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KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

M548

DRY SEASON

SCALE

0 1 2 3 4 MILES

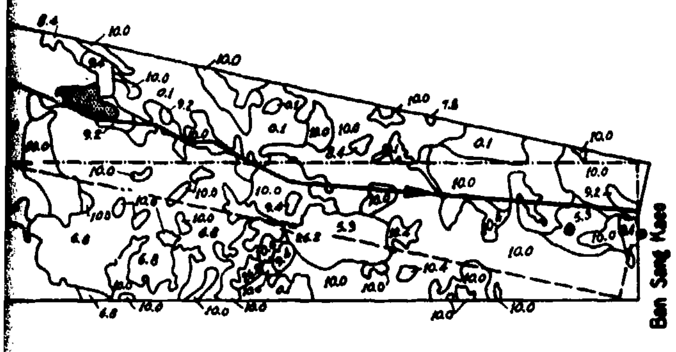
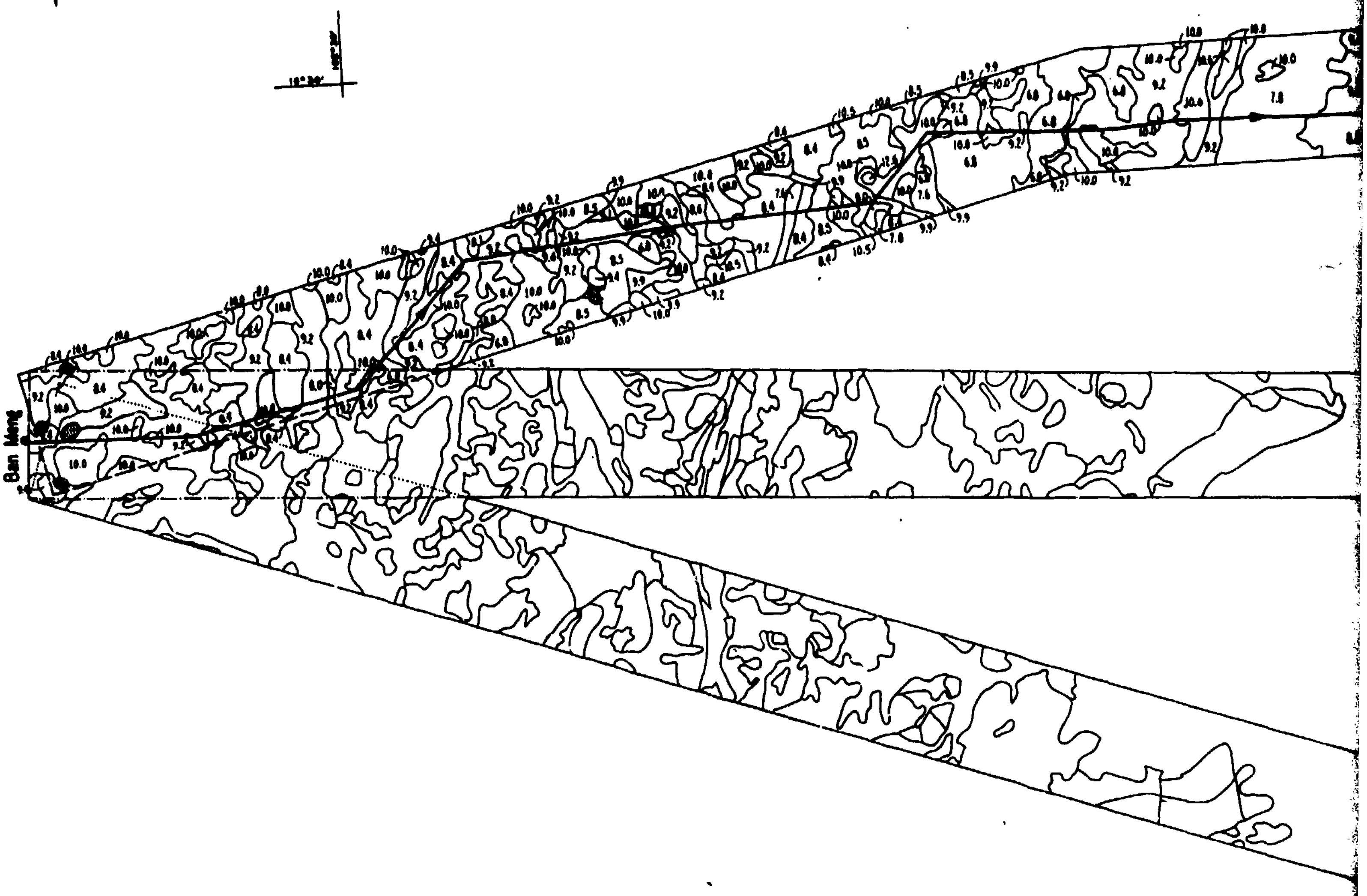


Plate 16



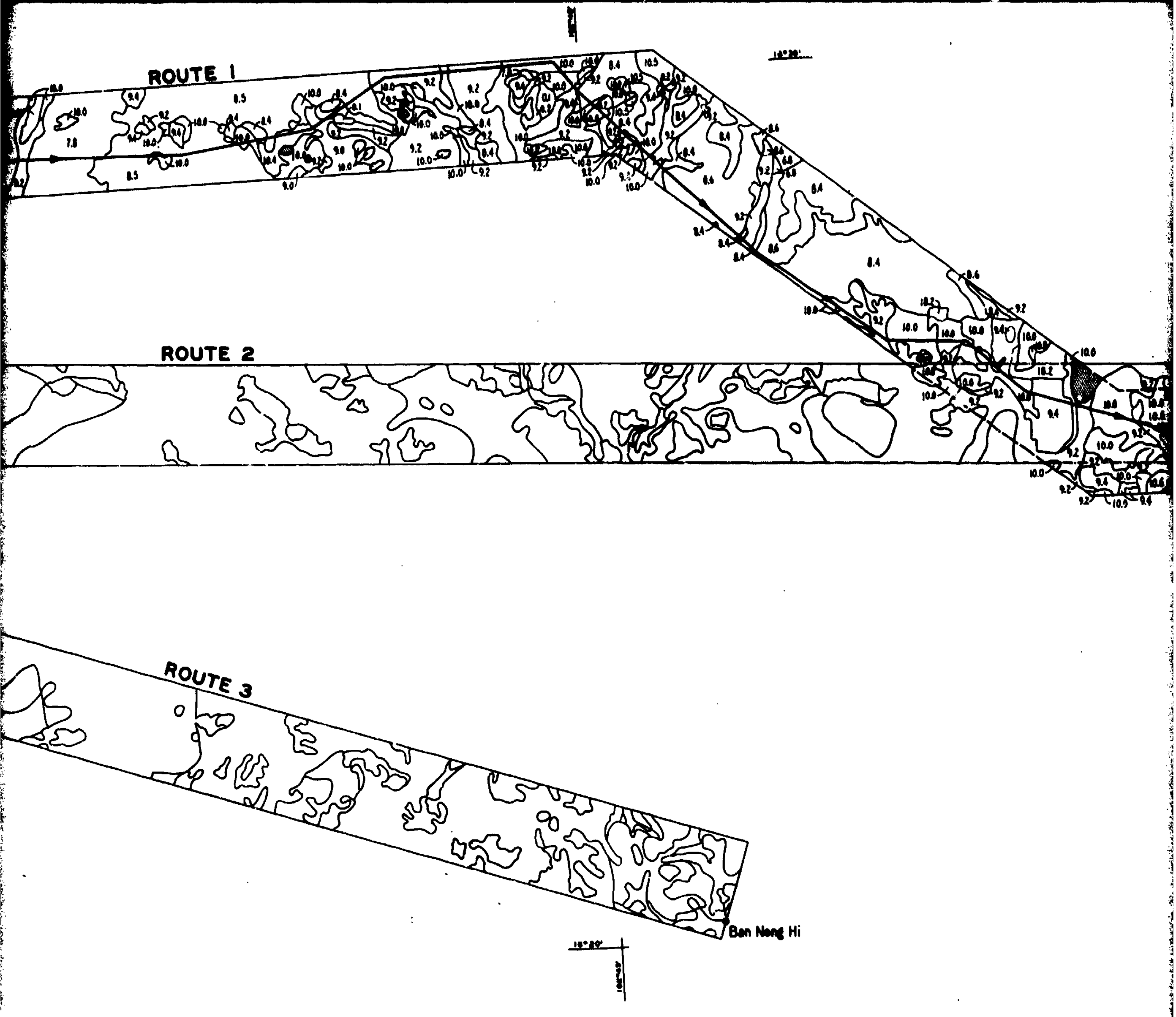
LEGEND

OPTIMUM PATH SELECTED WITHIN THE BOUNDARIES OF ROUTE 1 BETWEEN BAN MENG AND BAN SANG KAEO.

10.0 NUMBER INDICATES VEHICLE SPEED IN MPH WITHIN EACH TERRAIN TYPE.

LAKE

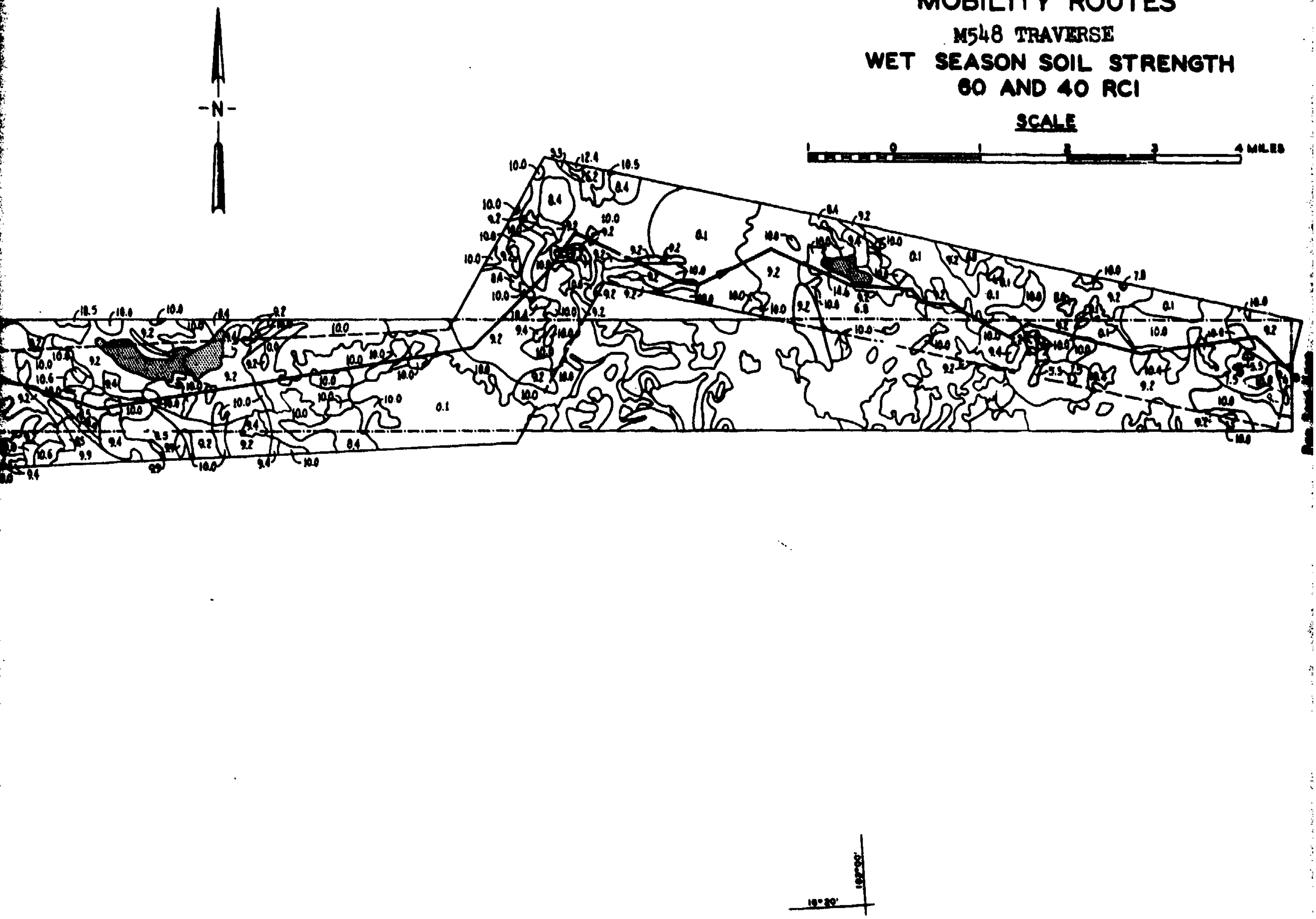
2

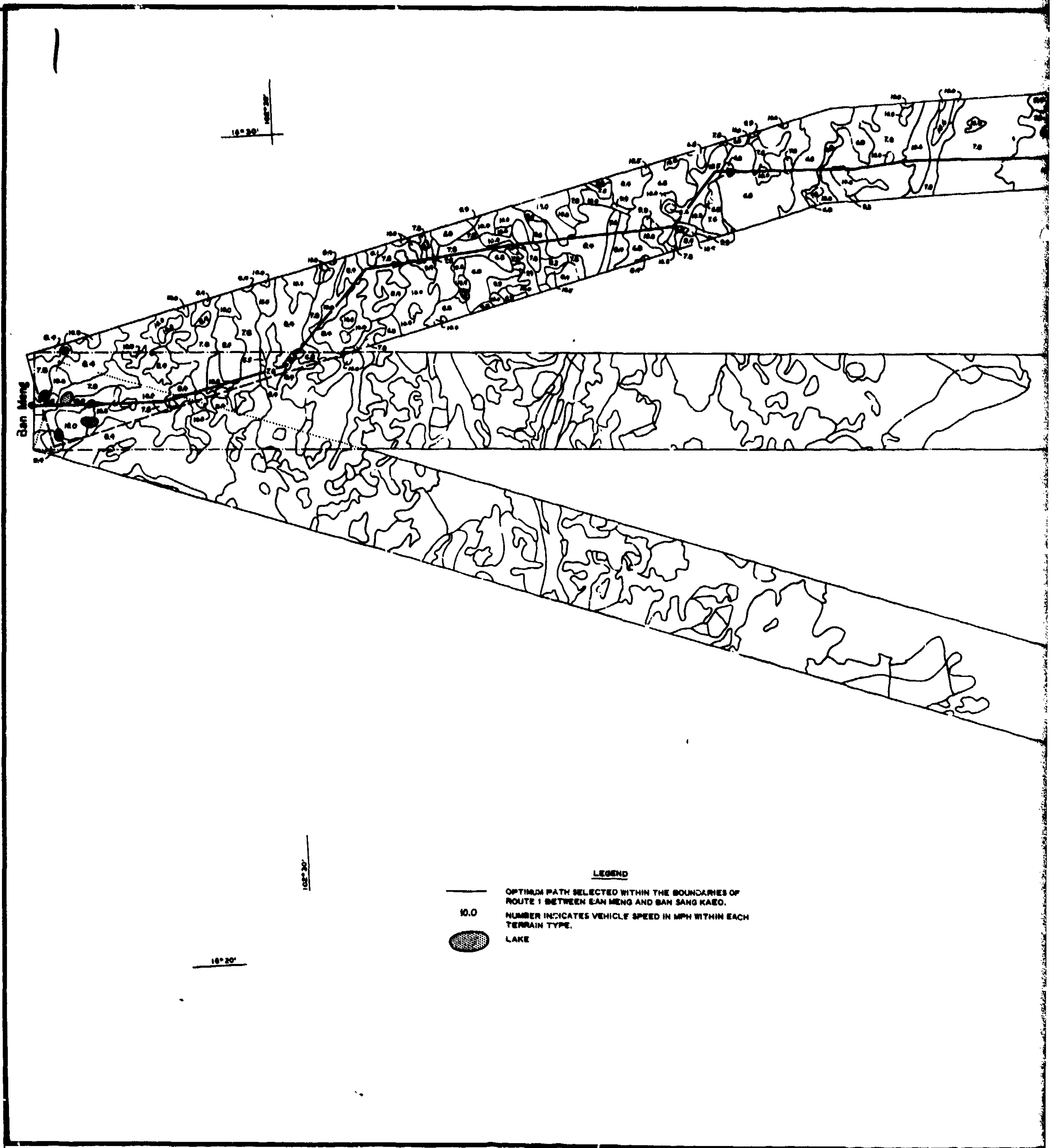


KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

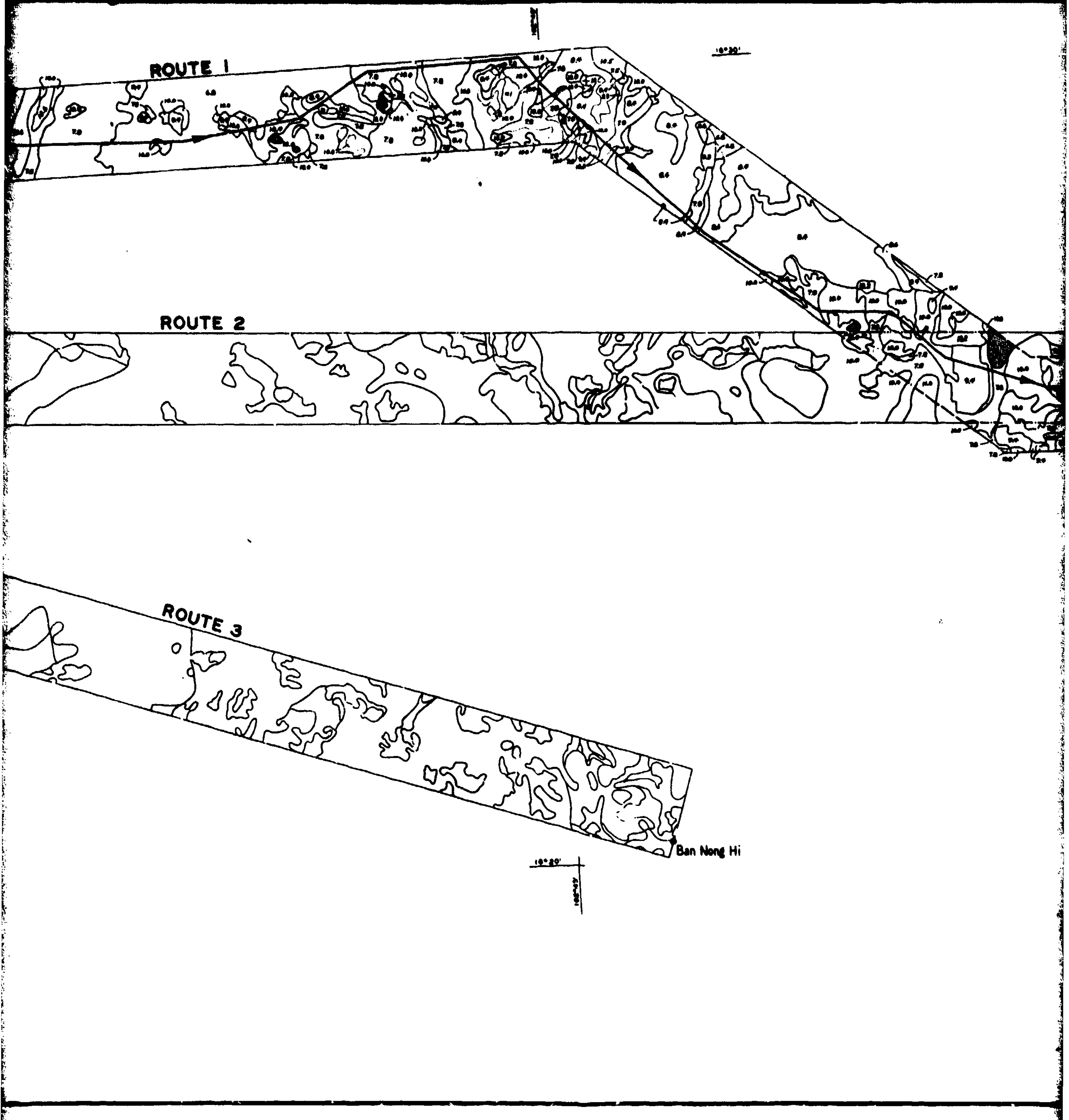
M548 TRAVERSE

WET SEASON SOIL STRENGTH
60 AND 40 RCI




Ban Meng
16°20'
102°30'
LEGEND
OPTIMUM PATH SELECTED WITHIN THE BOUNDARIES OF ROUTE 1 BETWEEN BAN MENG AND BAN SANG KAEO.
10.0
NUMBER INDICATES VEHICLE SPEED IN MPH WITHIN EACH TERRAIN TYPE.
LAKE

2-1



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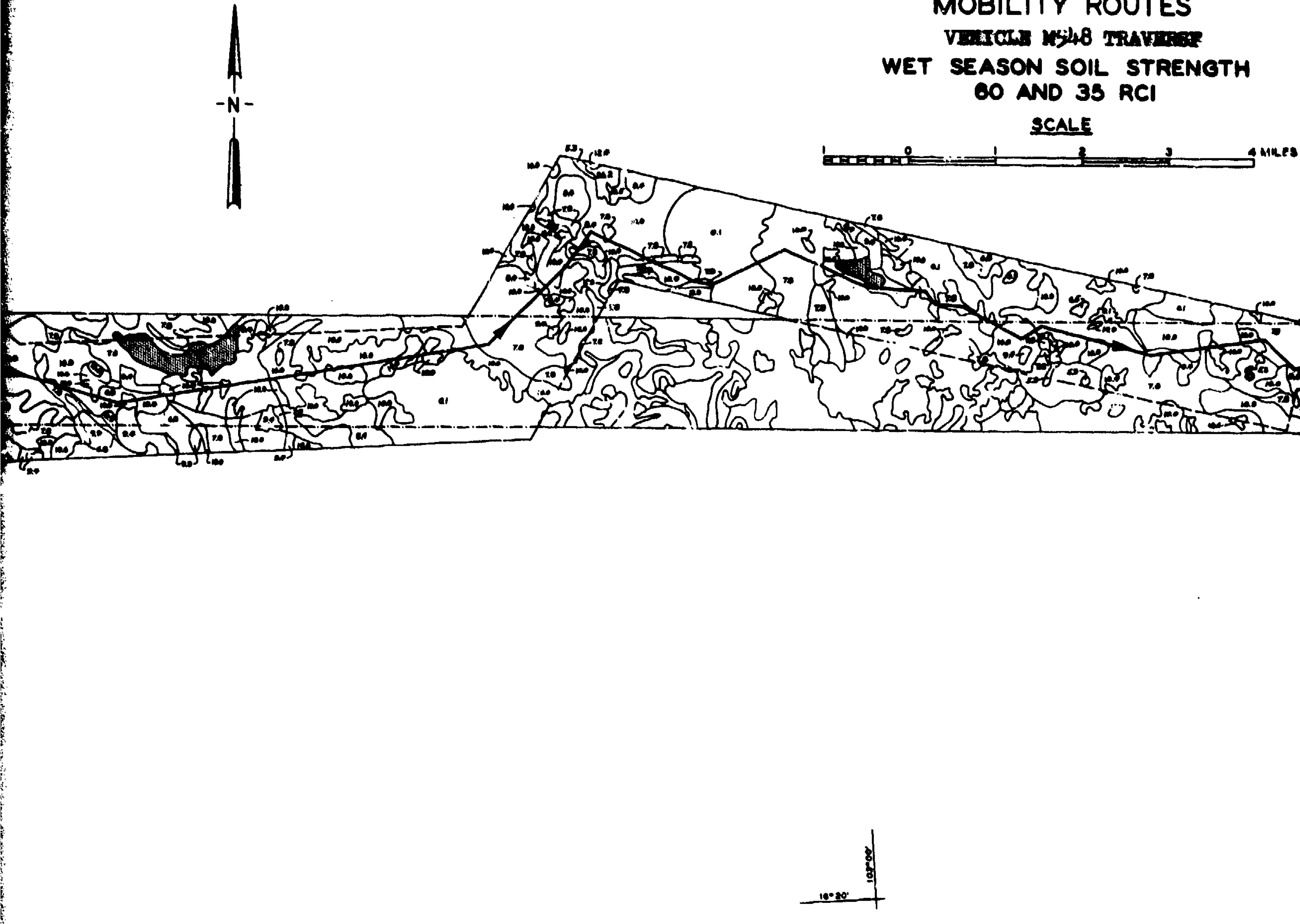
KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

VEHICLE M548 TRAVERSE

WET SEASON SOIL STRENGTH

60 AND 35 RCI

SCALE



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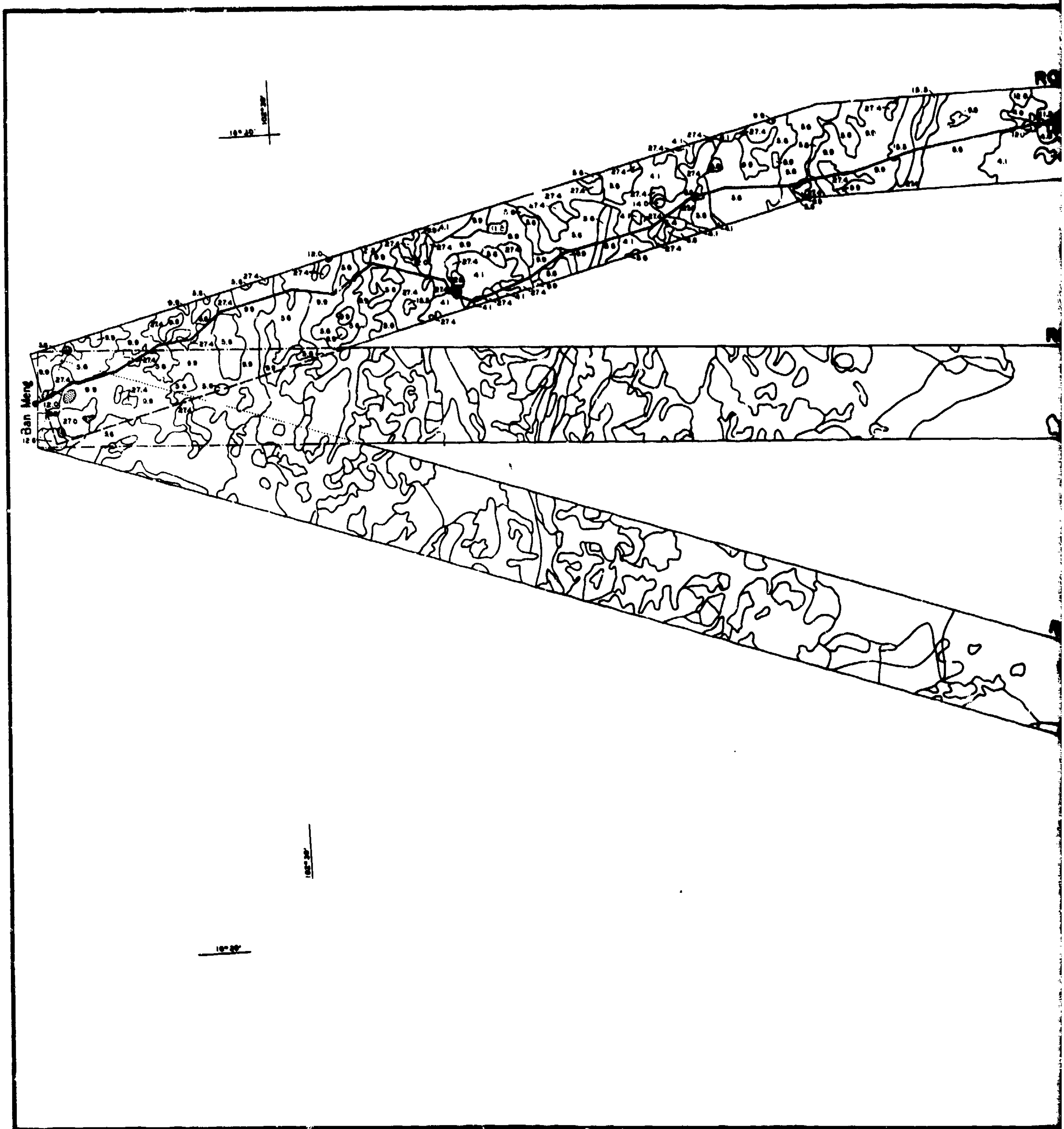
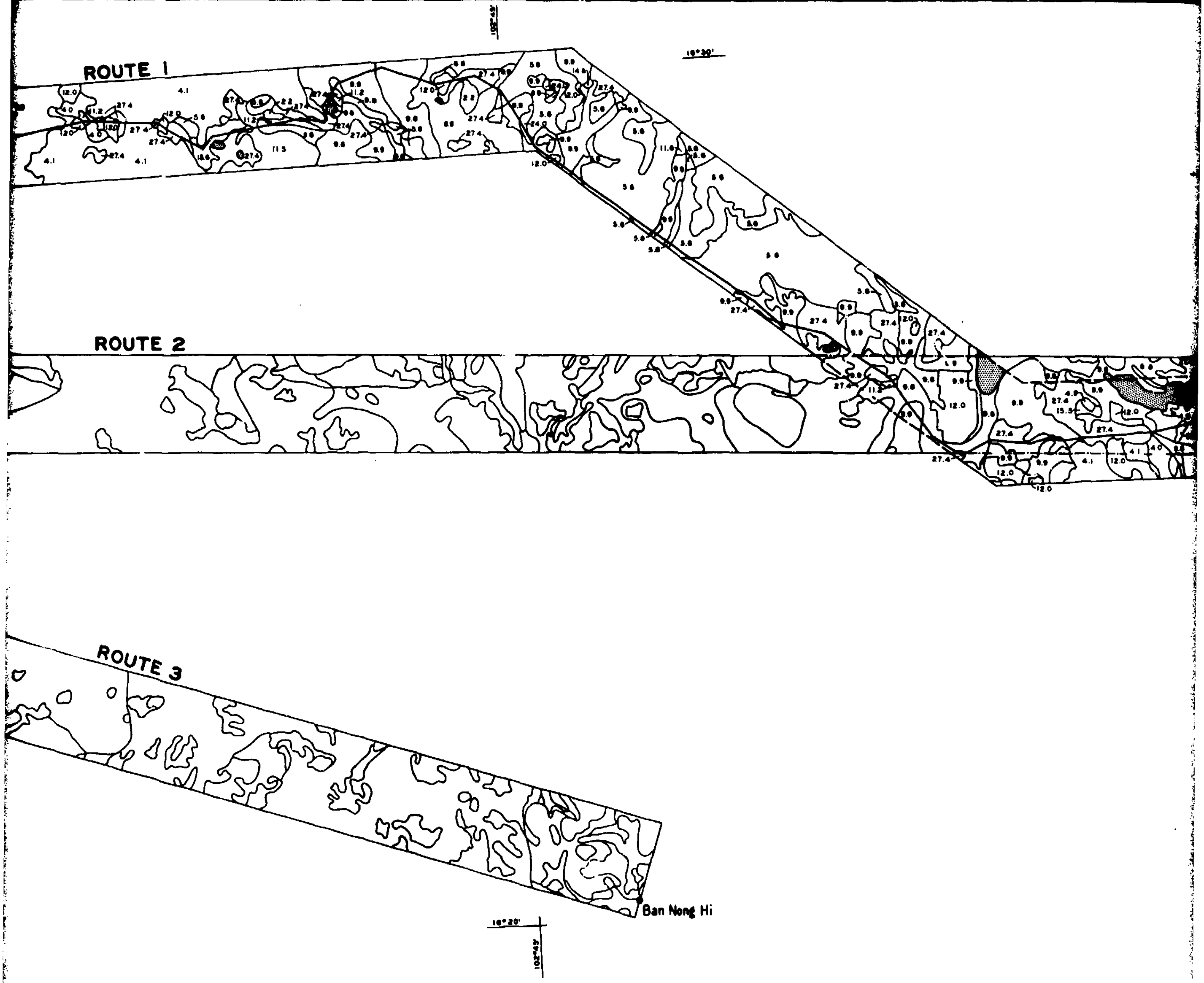

Ban Meng

2



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KHON KAEN CROSS-COUNTRY MOBILITY ROUTES

M113A1 TRAVERSE

DRY SEASON SOIL STRENGTH
60 AND 40 RCI

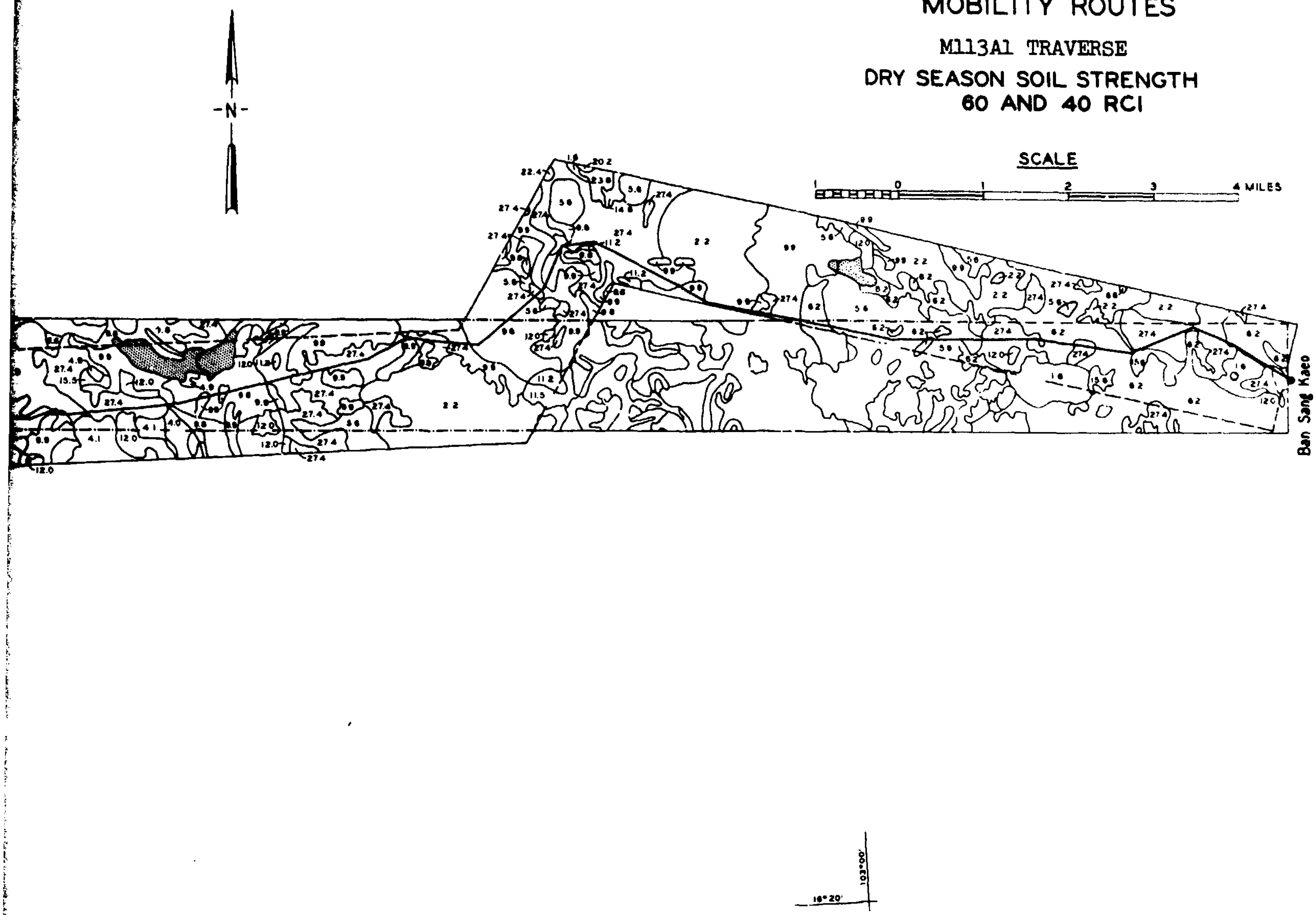


Plate 19

APPENDIX A: WES ANALYTICAL MODEL FOR PREDICTING OFF-ROAD GROUND VEHICLE PERFORMANCE

1. The WES analytical model for predicting cross-country performance is described in detail in WES Technical Report No. 3-783, "An Analytical Model for Predicting Cross-Country Vehicle Performance," which is now in preparation. This model uses as input data terrain characteristics, vehicle characteristics and performance, and terrain-vehicle performance relations to predict performance in terms of speed, fuel consumption, and delivery rate.

2. The portion of the WES analytical model that pertains to vehicle performance predictions (speed and delivery rate) in areal terrain factor complexes composed of any combination of factors of surface composition, surface geometry, and vegetation was used in this study and is identified in fig. A1 as program 1. Brief discussions of the basic relations used and the application of the WES model are presented in tables A1 and A2, respectively.

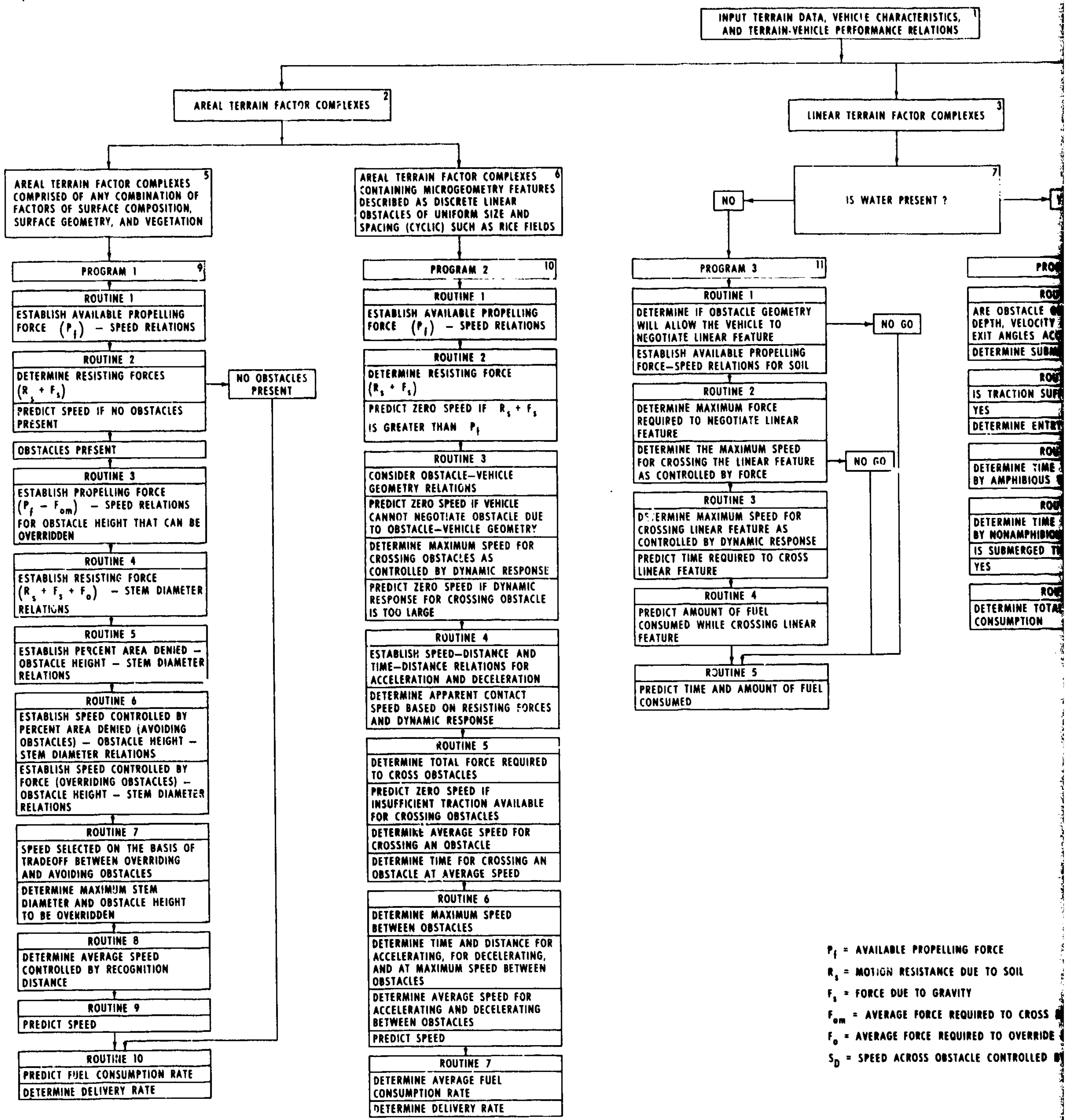
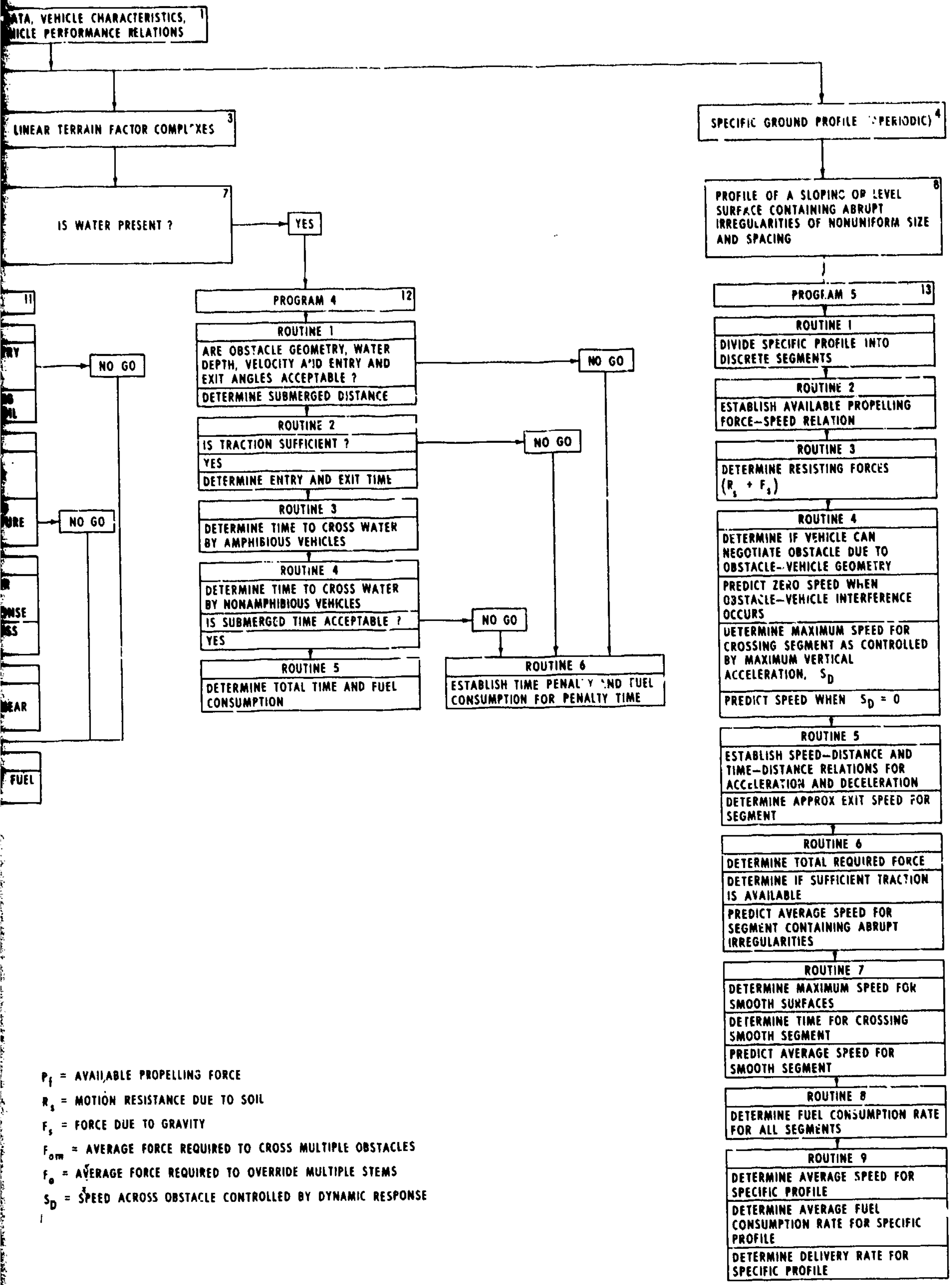


Fig. A1. WES analytical model for predicting vehicle p

2

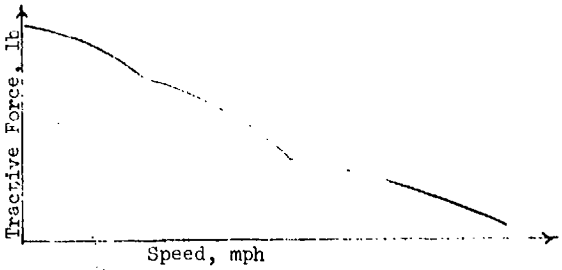


for predicting vehicle performance

SURFACE COMPOSITION

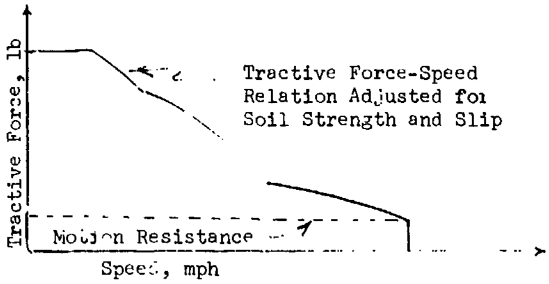
Pavement-vehicle relations

The WES analytical model for predicting cross-country performance of military vehicles begins with a basic relationship peculiar to each vehicle type, which expresses the maximum tractive force that can be developed at any speed on a firm, level surface. The relation for a particular vehicle may be obtained empirically by drawbar pull-speed and motion resistance-speed tests on a firm, level surface or may be computed from engine performance data taking into account propulsion system losses. An example of this relation is shown in the following sketch:



Soil-vehicle relations

For a given soil type and strength within a terrain complex, the maximum traction that the vehicle can develop, the motion resistance, and the tractive force-slip relations are used to adjust the relation shown in the above paragraph for the effect of soil strength. This may be done empirically, by field tests, or may be computed by previously established relations[1,2] to yield a curve showing the tractive force that the vehicle can develop at any speed on smooth, level soil of the given type and strength. An example is shown in the following sketch.



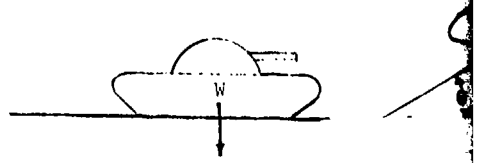
Although vehicles rarely attain the maximum speed permitted by the surface they are crossing,[3] the above relation may be considered as the baseline of the WES model. On the tractive force axis are entered the other resisting forces; on the speed axis are entered speed limits imposed by surface roughness, visibility and the effects of water crossings (swimming, fording, and entrances and exits from streams).

[1, 2] Raised numbers refer to the List of References at the end of this paper.

SURFACE GEOM

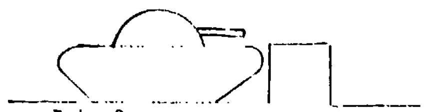
Slopes

The effect of macroslopes (slopes lon
on vehicle speed is taken into account in
to compute the forces due to gravity as sh



Large scale linear obstacles

For such obstacles as ditches, dikes,
vehicle-terrain model is constructed to de
and if not to determine the maximum vehicl
the vehicle attempts to negotiate the obst
following sketches.



Interference

The force required for the vehicle to negot
angle is considered as the maximum force re

Large scale nonlinear obstacles

Boulders, mounds, craters, and other l
the vehicle may override (vertical obstacl
are evaluated in the same manner as the la
override is concerned. For those which ma
determined by the area denied-speed relati
or predicted relation which indicates the
area denied is within the limits of 10 per
is less than 10 percent, there is no effec
than 60 percent, the area is impassable.
shown in the sketch below.

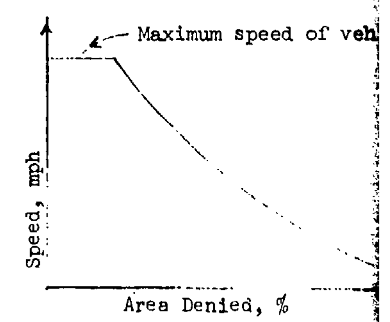
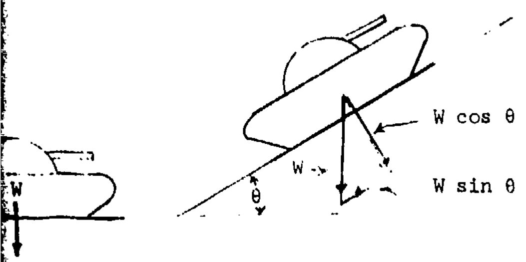


Table A1

BASIC RELATIONS USED IN THE WES MODEL

SURFACE GEOMETRY

roslopes (slopes longer than wheelbase or track length) ken into account in the model by use of classic formulas due to gravity as shown in the following sketch.



tacles

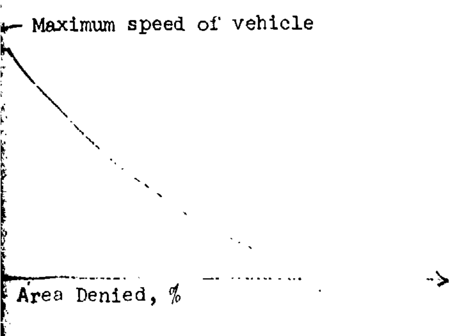
es as ditches, dikes, etc., a two-dimensional geometric is constructed to determine if interference will occur, e the maximum vehicle attitude angle that will occur as o negotiate the obstacle. Examples are shown in the

Maximum Attitude Angle, α

r the vehicle to negotiate the maximum vehicle attitude s the maximum force required due to the abrupt irregularity.

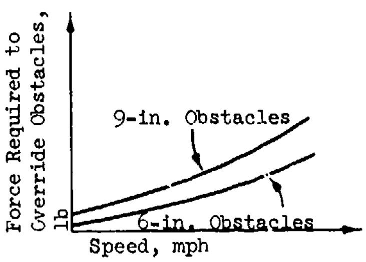
obstacles

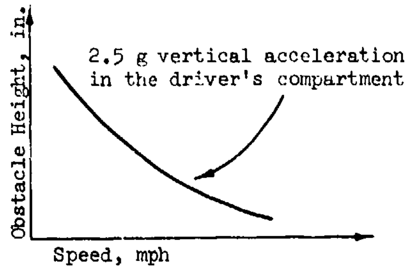
, craters, and other large-scale nonlinear obstacles which ide (vertical obstacles) or may avoid (lateral obstacles) same manner as the large-scale linear obstacles insofar as . For those which may be avoided, the effect on speed is a denied-speed relation.[4] This is an empirically established which indicates the effect maneuvering has on speed when the the limits of 10 percent and 60 percent. When area denied nt, there is no effect on speed; when area denied is greater area is impassable. The general form of the relation is elow.



Small scale obstacles

Small scale obstacles (surface roughness) which cause vibration or vertical acceleration of the vehicle, may be linear or non-linear and may or may not be avoidable. For those which are unavoidable, the average force-speed-obstacle height relations[1] are used to determine the average force required for override and the speed-obstacle height-vertical acceleration relation[5] is used to limit the speed on the basis of driver tolerance to vertical acceleration. Examples of these relations are shown in the sketches below:



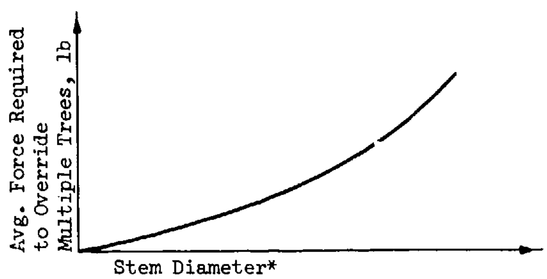


The effect on vehicle speed of small scale irregularities which are avoided is determined by the area denied-speed relations cited above.

VEGETATION

Override

The effect of overriding vegetation on speed is considered by the model in terms of force required to override multiple trees. Established relations[6] of stem diameter-spacing - work required to override and maximum bending stress for speeds of 0.1 to 17.0 mph at a range of pushbar heights are used to derive the relation of average force required to override multiple trees and stem diameters overridden. An example of the derived relation is shown below:



The force required to fail a single tree of each size is compared to the force the leading edge of the vehicle can withstand to determine the maximum size tree that can be overridden and is also used to determine longitudinal acceleration of the vehicle in a further check that limits the size tree overridden to one that will not produce a longitudinal acceleration greater than the driver's tolerance (2.0 g).

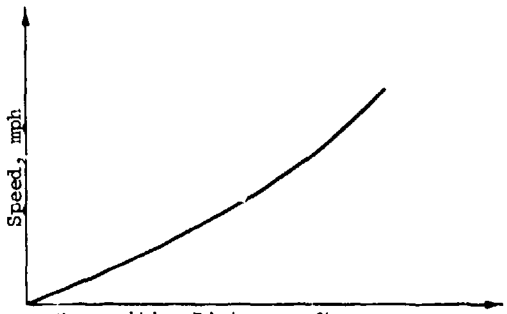
*Except when otherwise indicated, stem diameter refers to maximum size overridden, hence all smaller stems are overridden and all larger stems are avoided.

Maneuvering

The effect of maneuvering (avoiding trees) on vehicle speed is determined by the area denied - speed relations in a manner analogous to that for non-linear obstacles.

Visibility

The constraint placed upon speed by visibility is considered to be a function of the distance at which a driver can recognize an obstacle he wishes to avoid. While the recognition distance-speed relation is not well-defined at the present time, some work has been done in this area[7], and the general form of the relation has been established as indicated in the following sketch:



HYDROLOGIC GEOMETRY

Although vehicle performance in features such as streams and channels is a part of the WES model, predictions for these features are generally made separately. Consideration is given to whether or not the vehicle can negotiate the obstacle, and if so, the time required is determined, based on an arbitrary speed for entry and exit, and for fording. The rated water speed is used to compute the time required for swimming. The results of certain work to date involving stream crossings in tropical and temperate areas and the hydrologic feature - vehicle relations will be presented in a report[8] now under preparation at WES. From the knowledge gained in these studies, the entry and exit speed and fording speed is considered to be 2.0 mph.

FUEL CONSUMPTION

Fuel consumption rate-speed relations for full-load and no-load conditions are used in the model to develop average fuel consumption rates for the vehicle when the engine is producing maximum power and when the engine is idling.

When the speed is limited by traction the average rate for full-load condition (maximum power) is used.

When the vehicle is going down slope and the effect of gravity exceeds the resisting force, the average rate for no-load condition is used.

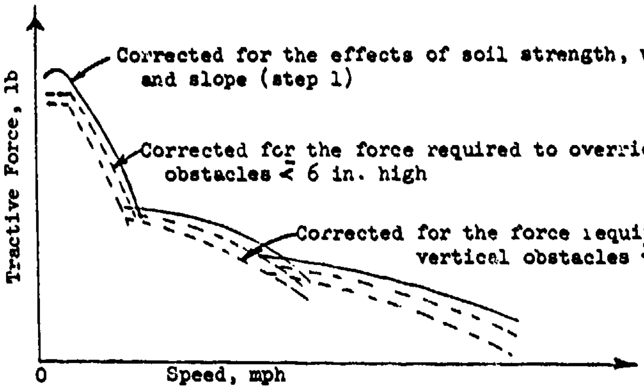
When the predicted speed is limited by factors other than traction available, e.g., dynamic response, visibility, the ratio of the force required to propel the vehicle to the maximum tractive force available at the predicted speed is used to linearly interpolate between the average fuel consumption rates for no-load and full-load conditions.

AREAL TERRAIN UNITS

The method by which performance is predicted for a specific areal terrain unit is outlined briefly in the following seven steps.

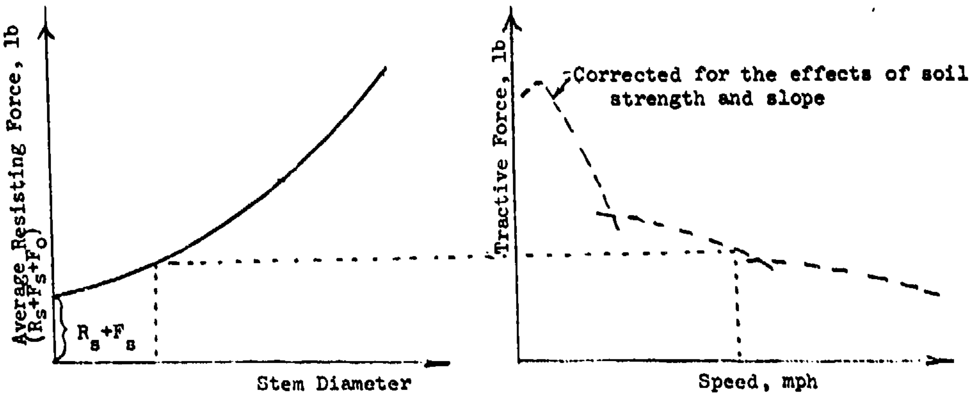
Step 1. Determine the tractive force (T_r) - speed relation considering the effects of soil strength, motion resistance, R_s, and resisting force due to gravity, F_s.

Step 2. Determine the average force, F_{om}, required to override vertical obstacles and subtract from tractive force available at all speeds as indicated on the following sketch.



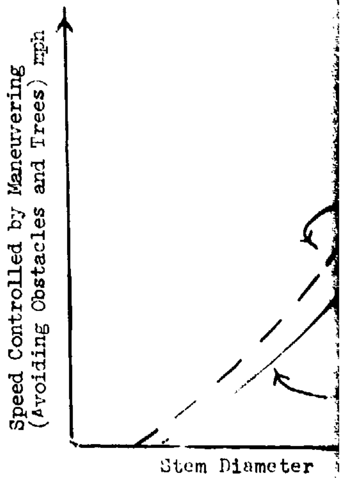
The above relation is not computed for vertical obstacles determined to be impassable due to obstacle-vehicle geometry interference, insufficient traction or exceeding the driver tolerance to vertical acceleration.

Step 3. Determine the average force, F_o, required to override multiple tree stems up to and including the maximum stem size a vehicle can override, and determine a speed based on the summation of the resisting forces R_s, F_s, and F_o. The procedure is illustrated graphically below.

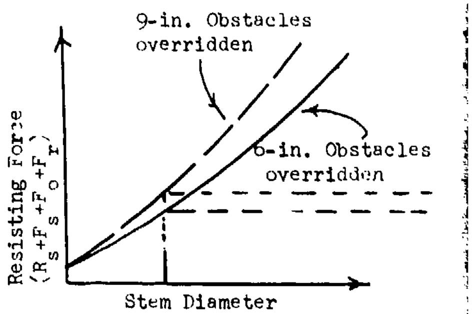


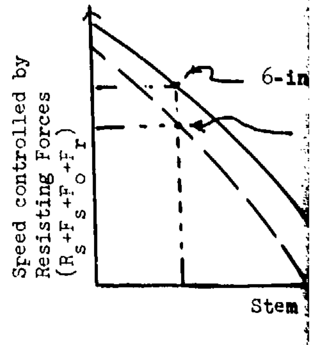
The computations of F_o and the corresponding speeds are terminated when the maximum stem size a vehicle can override is determined as a result of consideration of traction available, vehicle damage, or driver tolerance to horizontal acceleration.

Step 4. Using the relations of
to be overridden, and vertical obst
the relation of speed (as controlled
obstacle height illustrated in the f

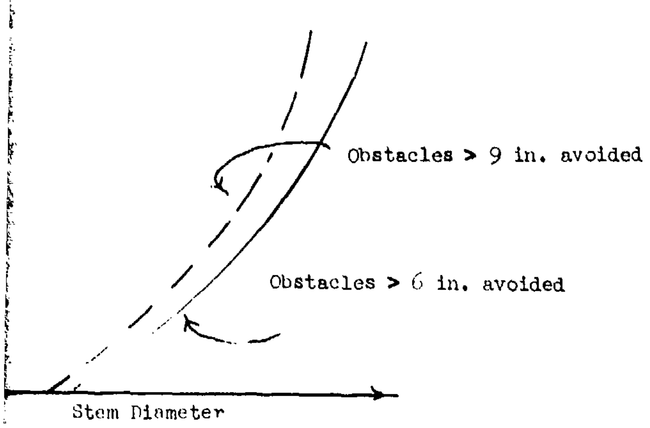


Step 5. Using the relations de
lation of force, F_r, required to acc
cent area denied, determine (a) the
and F_r as a function of stem diamete
as a function of total resisting for
speed as a function of stem diameter
procedure is shown in the following

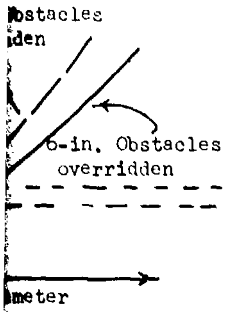


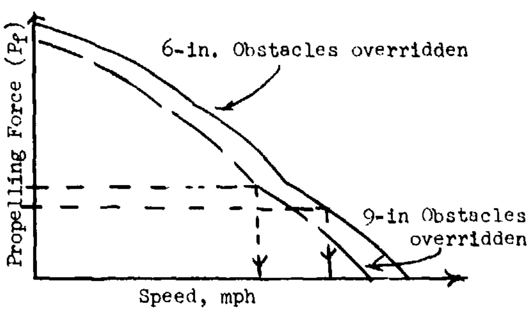


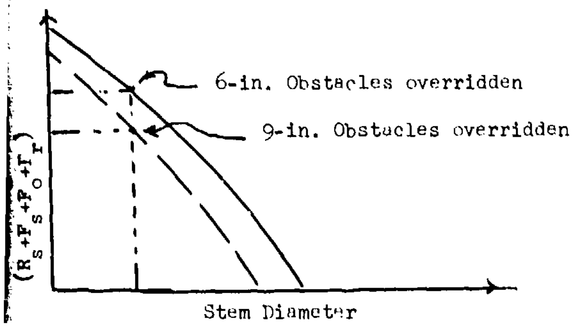
ng the relations of percent area denied, stem diameter and vertical obstacle height to be overridden, develop eed (as controlled by maneuvering), stem diameter, and llustrated in the following sketch.



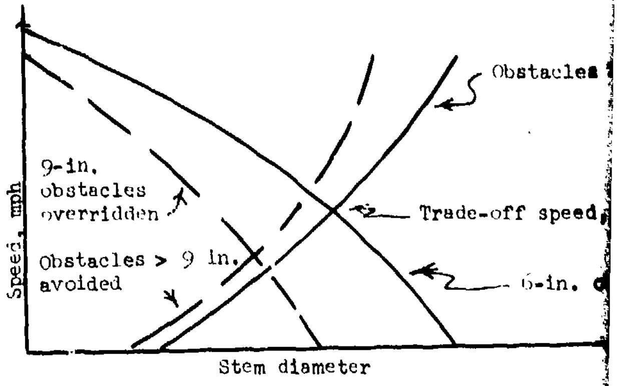
ing the relations developed in previous steps, and the re-, F_r, required to accelerate during maneuvering versus pre-d, determine (a) the average resisting force R_s, F_s, F_o, ction of stem diameter ≥ stem diameter overridden, (b) speed f total resisting forces R_s, F_s, F_o, F_r, and F_{om}, and (c) tion of stem diameter ≥ stem diameter to be overridden. The own in the following sketches.







Step 6. Predict speed S_t on the basis of trade-off between overrid ing obstacles as illustrated in the following sketch.



Step 7. Predict a speed, S_v, on the basis of the recognition dis maximum distance at which a driver can recognize an obstacle he must a the lower of S_t or S_v as the predicted speed for the terrain complex. speed, the fuel consumption relation and the cargo capacity, determine ion rate and the delivery rate.

LINEAR TERRAIN UNITS

Predictions of the time required to cross streams, rivers, etc. a determining if the vehicle can cross the feature unassisted. Determin follows:

For all vehicles. Will bank configuration cause interference
Are water entry and exit angles acceptable
Is sufficient traction available?
Is stream velocity acceptable?

For fording vehicles. Is fording depth exceeded?

For deep fording vehicles. Is submersible time exceeded?

If the vehicle can cross unassisted the time required is predict

For fording vehicles. Entry and exit distance divided by ave and exit, plus fording distance divided by fording speed, plus time r fording kit.

For amphibious vehicles. Entry and exit distance divided by plus swimming distance divided by swimming speed.

If the vehicle cannot cross unassisted the application of engine winching, towing, bridging, etc., is considered and a time penalty de sumption in hydrologic geometry features is predicted using the same to areal terrain units with the following special considerations:

Entry and exit. Full-load fuel consumption rate is used for no-load fuel consumption rate is used for one-half the time.

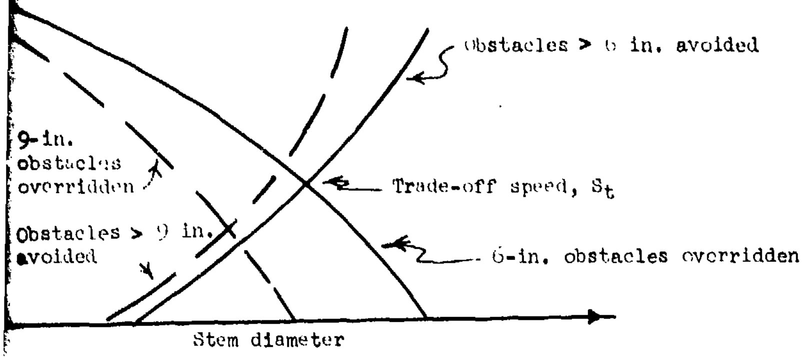
Fording. Fuel consumption rate is interpolated by ratio of t to tractive force available at fording speed.

Swimming. No-load fuel consumption rate is used.

Penalty time. No-load fuel consumption rate is used for one- no fuel is considered used during the other half of penalty time.

Delivery rate in hydrologic geometry features is predicted by di tance across the feature by the total time to arrive at an average s this speed by the cargo capacity of the vehicle.

peed S_t on the basis of trade-off between overriding and avoid-
rated in the following sketch.



e speed, Sv, on the basis of the recognition distance, i.e. the
ich a driver can recognize an obstacle he must avoid; and select
as the predicted speed for the terrain complex. Using the selected
ption relation and the cargo capacity, determine the fuel consumpt-
ery rate.

LINEAR TERRAIN UNITS

e time required to cross streams, rivers, etc. are made by first
icle can cross the feature unassisted. Determinations are made as

les. Will bank configuration cause interference?
Are water entry and exit angles acceptable?
Is sufficient traction available?
Is stream velocity acceptable?

ehicles. Is fording depth exceeded?

ding vehicles. Is submersible time exceeded?

n cross unassisted the time required is predicted as follows:

hicles. Entry and exit distance divided by average speed for entry
distance divided by fording speed, plus time required to install

vehicles. Entry and exit distance divided by entry and exit speed,
divided by swimming speed.

annot cross unassisted the application of engineering effort, such as
dging, etc., is considered and a time penalty determined. Fuel con-
c geometry features is predicted using the same techniques applicable
with the following special considerations:

t. Full-load fuel consumption rate is used for one-half the time,
ion rate is used for one-half the time.

l consumption rate is interpolated by ratio of tractive force used
ilable at fording speed.

-load fuel consumption rate is used.

No-load fuel consumption rate is used for one-half the penalty time,
used during the other half of penalty time.

hydrologic geometry features is predicted by dividing the total dis-
ure by the total time to arrive at an average speed and multiplying
go capacity of the vehicle.

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5. FMC Corporation, Ordnance Engineering Division, San Jose, Calif., "A Computer Analysis of Vehicle Dynamics While Traversing Hard Surface Terrain Profiles," Contract Report 3-155, Feb 1966, U. S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss.

6. Blackmon, C. A. and Randolph, D. D., "An Analytical Model for Predicting Cross-Country Vehicle Performance; Appendix B: Vehicle Performance in Lateral and Longitudinal Obstacles (Vegetation); Vol II: Longitudinal Obstacles," Technical Report No. 3-783, Jul 1968, U. S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss.

7. U. S. Army Engineer Waterways Experiment Station, CE, "An Analytical Model for Predicting Cross-Country Vehicle Performance; Appendix E: Quantification of the Screening Effects of Vegetation on Driver's Vision and Vehicle Speed," Technical Report No. 3-783 (in preparation), Vicksburg, Miss.

8. ________, "An Analytical Model for Predicting Cross-Country Vehicle Performance; Appendix D: Performance of Amphibious Vehicles in the Water-Land Interface (Hydrologic Geometry)," Technical Report No. 3-783, (in preparation), Vicksburg, Miss.

APPENDIX B: EVALUATION OF DYNAMIC RESPONSE OF M706

Input Parameters Used

Symbol	Description	Value
n	Number of axles----------------------------------	2
$\bar{x}_{1,2}$	Height of axle C.G. above ground at full load, in.	22.60
$\bar{x}$	Height of body C.G. above ground at full load, in.	41.87
W	Sprung weight, lb-----------------------------	11,962
$\ell\ell_1$	Axle to body C.G. distance, in.-----------------	57.75
$\ell\ell_2$	Axle to body C.G. distance, in.-----------------	47.25
$\ell_{1,2,3,4}$	Suspension to body C.G. distance, in.-----------	16.83
$LL_{1,2,3,4}$	Suspension to axle C.G. distance, in.-----------	16.83
$L_{1,2,3,4}$	Tire-to-axle C.G. distance, in.-----------------	36.5
W_1	Unsprung weight of axle, lb--------------------	2236
W_2	Unsprung weight of axle, lb--------------------	2052
$S_{1,2}$	Springs suspension reference distance-----------	17.69
$S_{3,4}$	Springs suspension reference distance-----------	17.44
$R_{1,2,3,4}$	Tire reference distance (undeflected wheel radius) -------------------------------------	24.95
$\bar{I}_y$	Body pitch inertia in.-lb/sec^2------------------	129,888
$\bar{I}_z$	Body roll inertia in.-lb/sec^2-------------------	--
$\bar{I}_{1,2,z}$	Axle roll inertia in.-lb/sec^2-------------------	--

Symbol	Description	Value
D	Driver's position to body C.G. (long. distance), in.-------------------------------	60.75
D_2	Driver's position to body C.G. (vert. distance), in.-------------------------	12.0
D_3	Driver's position to body C.G. (lat. distance), in.--------------------------	12.0
k_j	Spring deflection versus suspension spring force----------------------------------	Fig. A2
c_j	Suspension deflection velocity versus suspension force-----------------------------	Fig. A3
KK_j	Tire spring rate of segmented wheel - 12 seg @ 10°, lb/in. --------------------------------	980 lb/in.
ccj	Tire damping rate lb-sec/in.------------------	0

NOTE: See fig. B1 for identification sketch.

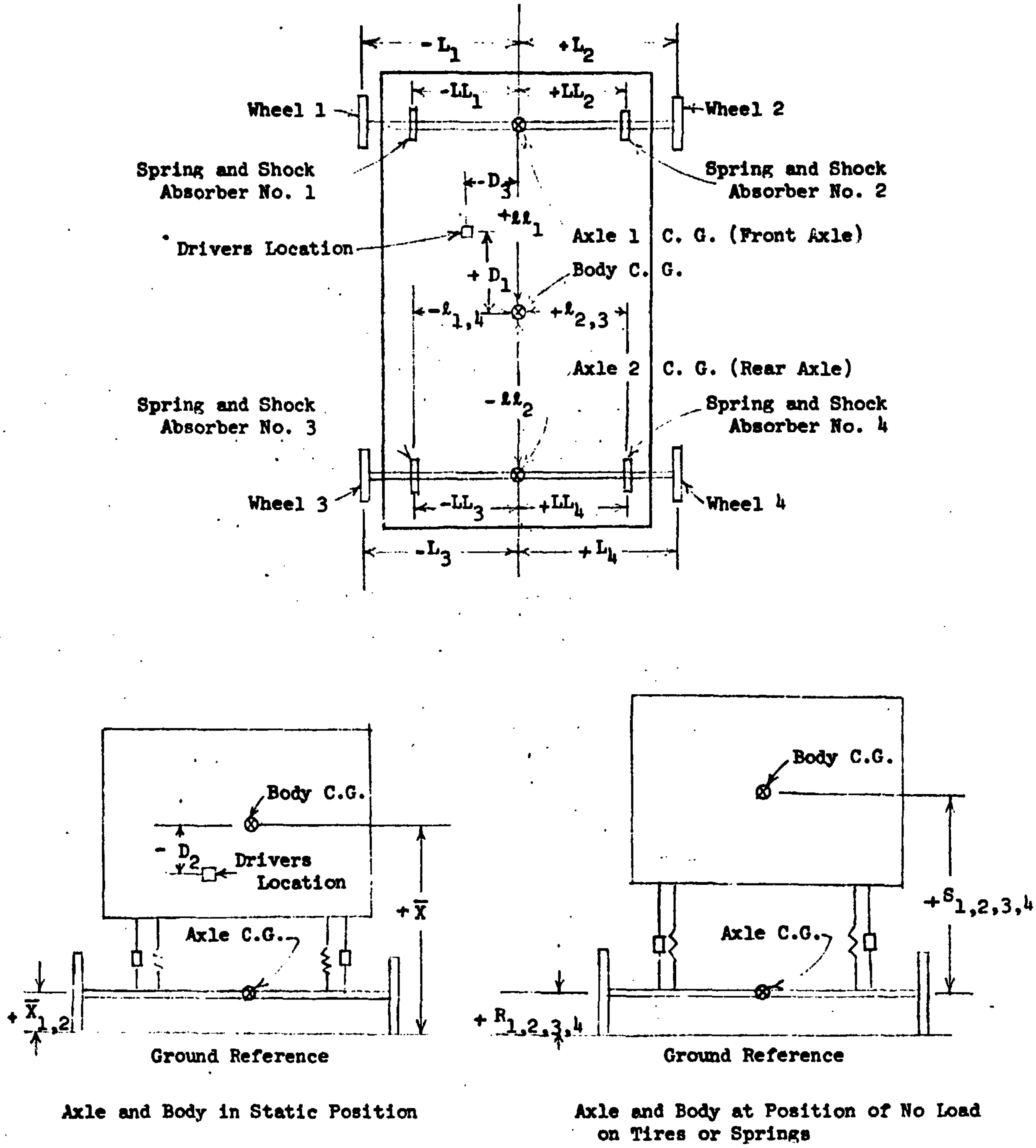


Fig. B1. Schematic drawing of input data for the M706 dynamic response mathematical model

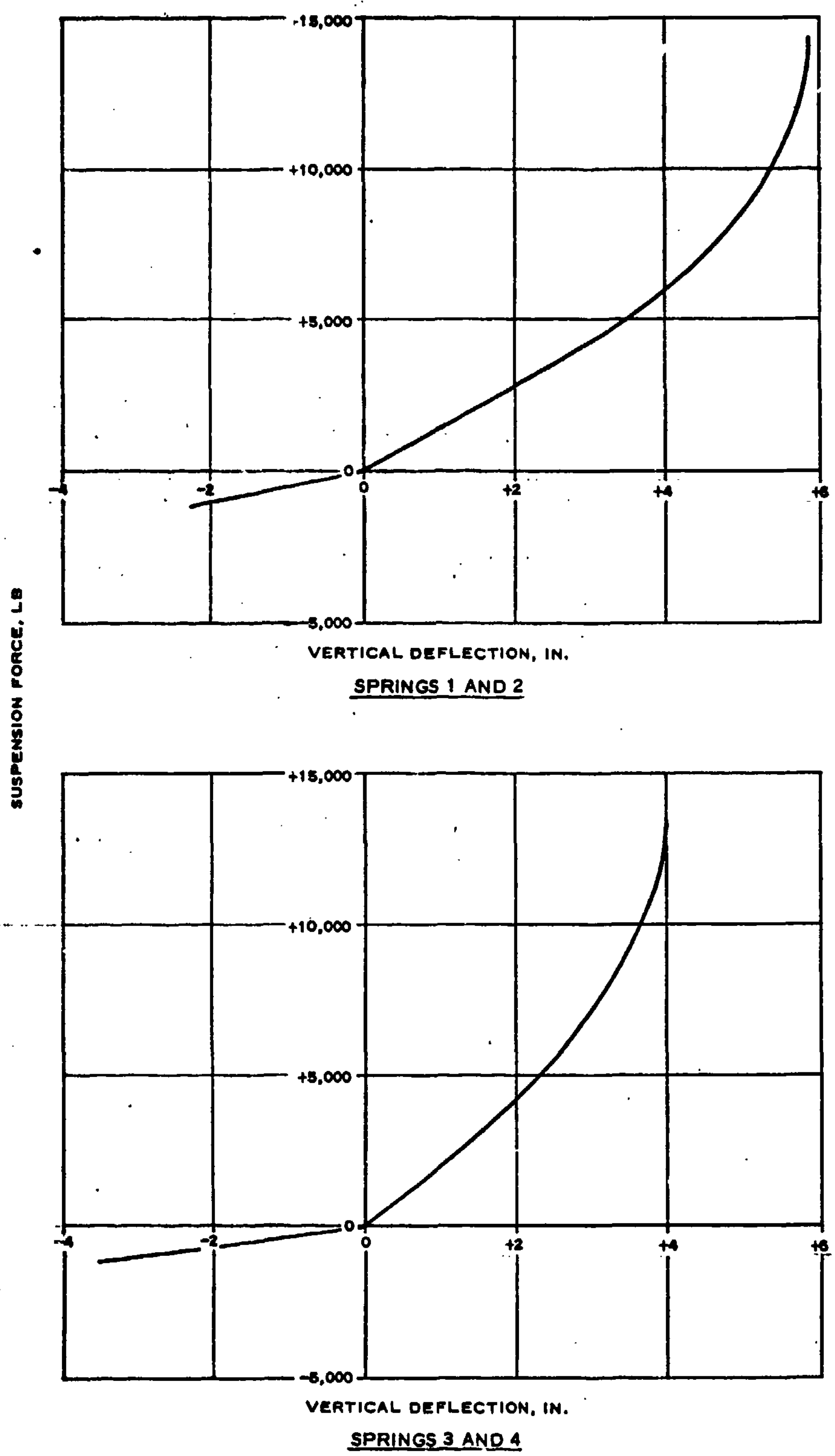


Fig. B2. Spring deflection versus suspension force for the M706

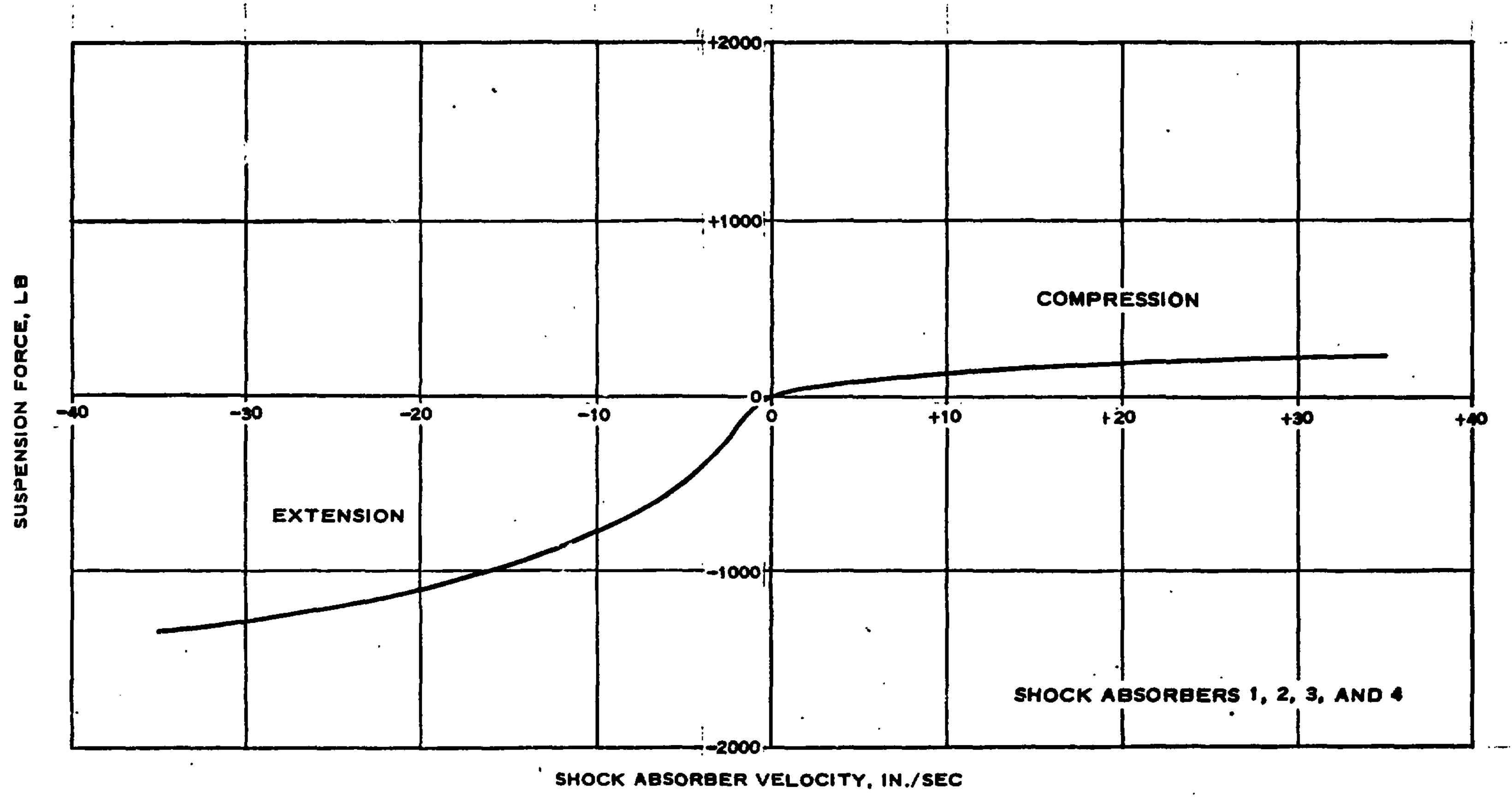


Fig. B3. Shock absorber velocity versus suspension force for the M706

APPENDIX C: EFFECT OF SOIL STRENGTH ON VEHICLE PERFORMANCE

1. At the conclusion of the wet-season analysis during the first phase of the study reported herein (see paragraph 3 of main text), additional general analyses were made of the effects of soil strength on vehicle performance, in an attempt to provide a more comprehensive treatment of this subject than was possible in the limited study. The performances of only four vehicles--M656, M54A2, M520, and M548--were analyzed. Speed, delivery rate, one-pass vehicle cone index (VCI_1), and overall trafficability in the United States and Thailand were investigated and are discussed in the following paragraphs.

Maximum speed performance

2. To give an indication of the relative effects of soil strength on speed performance of the four vehicles, maximum speeds were determined over a range of soil strengths from the minimum required to complete one pass a cone index of 300 for a clay of uniform strength and for a pavement. The maximum speed values were determined according to procedures described in WES Technical Report No. 3-783, "An Analytical Model for Predicting Cross-Country Vehicle Performance," now in preparation. These data are plotted in fig. C1. The value of the abscissa of each curve at Y = 0 in fig. C1 is the minimum soil strength required to permit one very slow pass of the vehicle (VCI_1). The computed VCI_1 values for the four vehicles are:

Vehicle	VCI_1
M656	23
M54A2	27
M520	30
M548	25

3. The VCI_1 determination was made for the M548 by using the WES mobility index equation for tracked vehicles.* Once the mobility index was computed, the 50-pass vehicle cone index (VCI_{50}) was determined from data shown in table C1. The VCI_1 for the M548 is approximately 50 percent of the VCI_{50}.

*Knight, S. J., "Trafficability of Soils, A Summary of Trafficability Studies Through 1955," Technical Memorandum No. 3-240, 14th Supplement, Dec 1956, U. S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Miss.

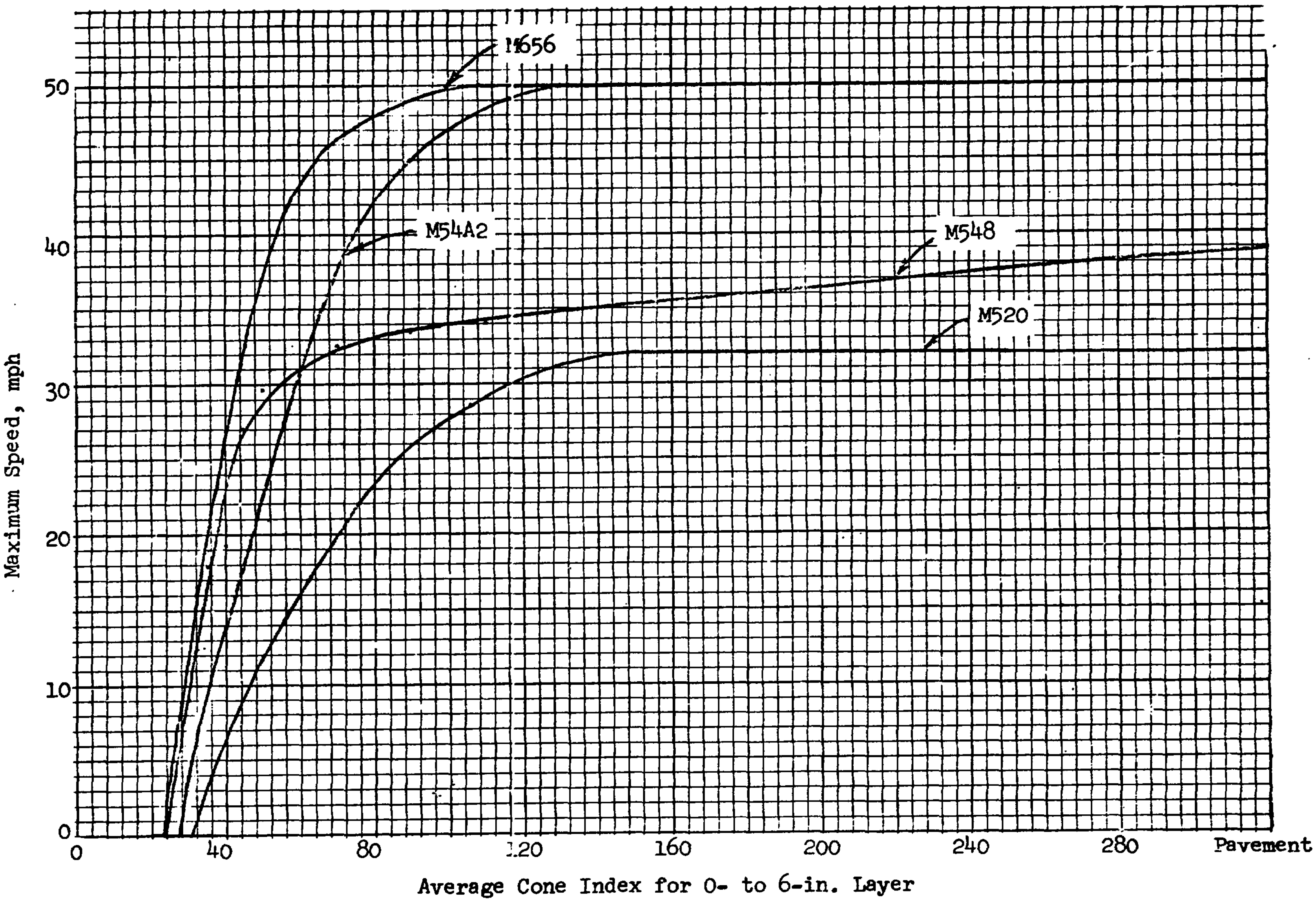


Fig. C1. Comparative speed performance on smooth, level clay soil of uniform strength

Delivery rate

4. A comparison of the performance of the four vehicles on the basis of delivery rate in ton-miles/hr as a function of soil strength is illustrated in fig. C2. (Delivery rate was obtained by multiplying speed and cargo capacity.) The M520 performance is much closer to the performance of the other wheeled vehicles (M656 and M54A2) than to that of the M548, as opposed to the speed performance shown in fig. C1, because the rate cargo capacity of the M520 is 8 tons, that of the M548 is 6 tons, and those of the M656 and the M54A2 are 5 tons each. Note that the delivery rates shown in fig. C2 are considerably higher than those listed in paragraph 91 of the main text, which are delivery rates established by considering the combined effects of all terrain factors. For example, the average delivery rate for the M520 between 60 and 40 cone index determined from fig. C2 is 90 ton-miles/hr, compared to 38.4 listed in paragraph 91 for the wet-season soil strength combination of 60 or 40 RCI.

Trafficabile areas in the United States and Thailand

5. The performance data illustrated in figs. C1 and C2 should be interpreted in terms of mission requirements or, in the absence of this type of information, knowledge of the frequency of occurrence of various soil strengths within the operational area of interest. The type of information of value in making basic decisions in all phases pertinent to ground vehicle mobility is shown in fig. C3*. When something is known about the frequency of occurrence and topographic position of soil strengths in an area, the importance of this factor can be evaluated in relation to others that are present; for example, in selecting vehicles to meet operational mission requirements.

6. Comparative data taken from fig. C3 and based on the individual VCI_1 values are summarized below.

	Percentage of Areas Trafficable			
	Thailand		U. S.	
Vehicle	Wet Season	High Moisture	Wet Season	High Moisture
M656	96.0	93.0	99.0	92.0
M54A2	95.0	90.0	98.7	87.5
M520	94.5	87.5	97.5	84.8
M548	95.5	91.5	98.8	89.7

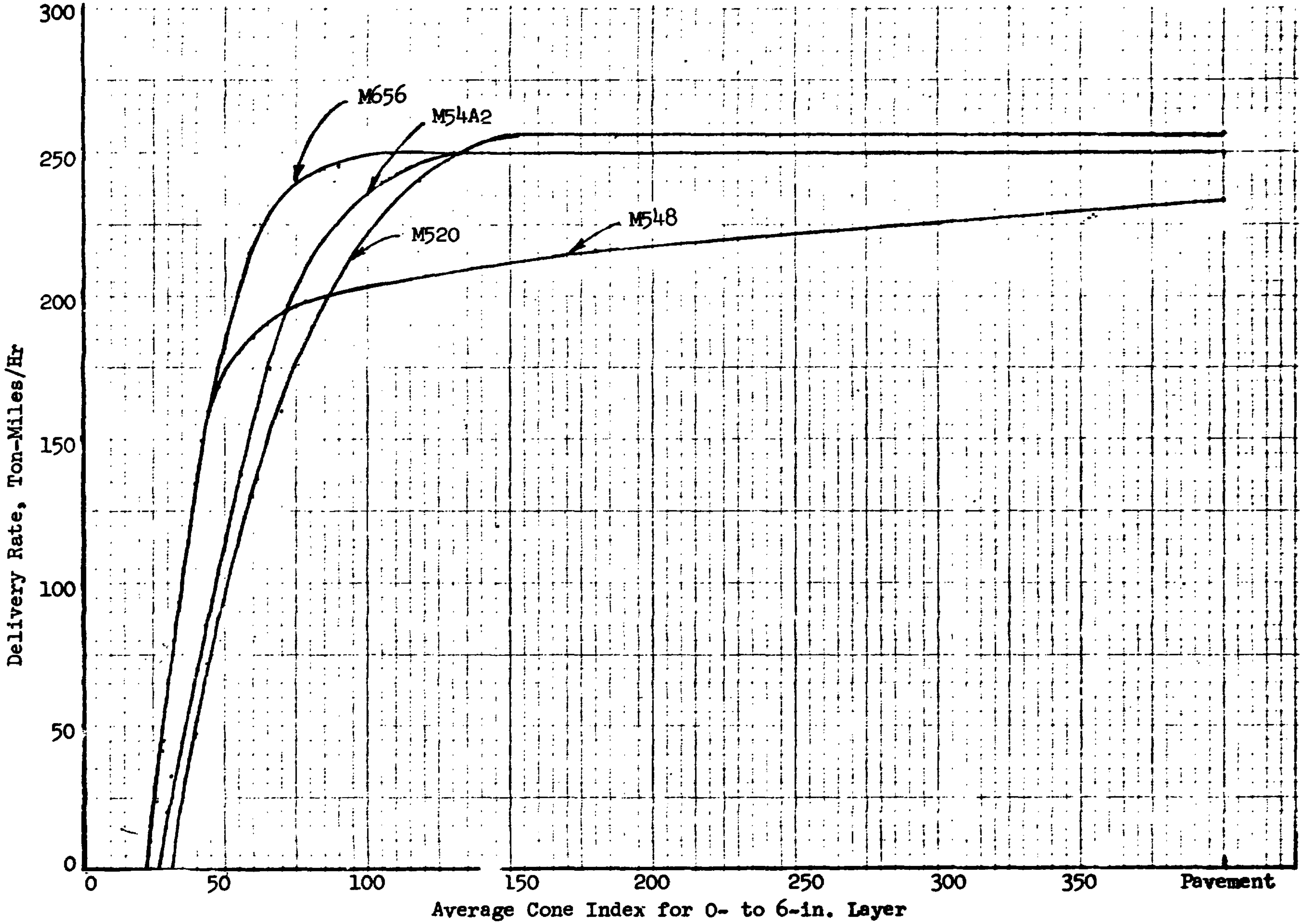
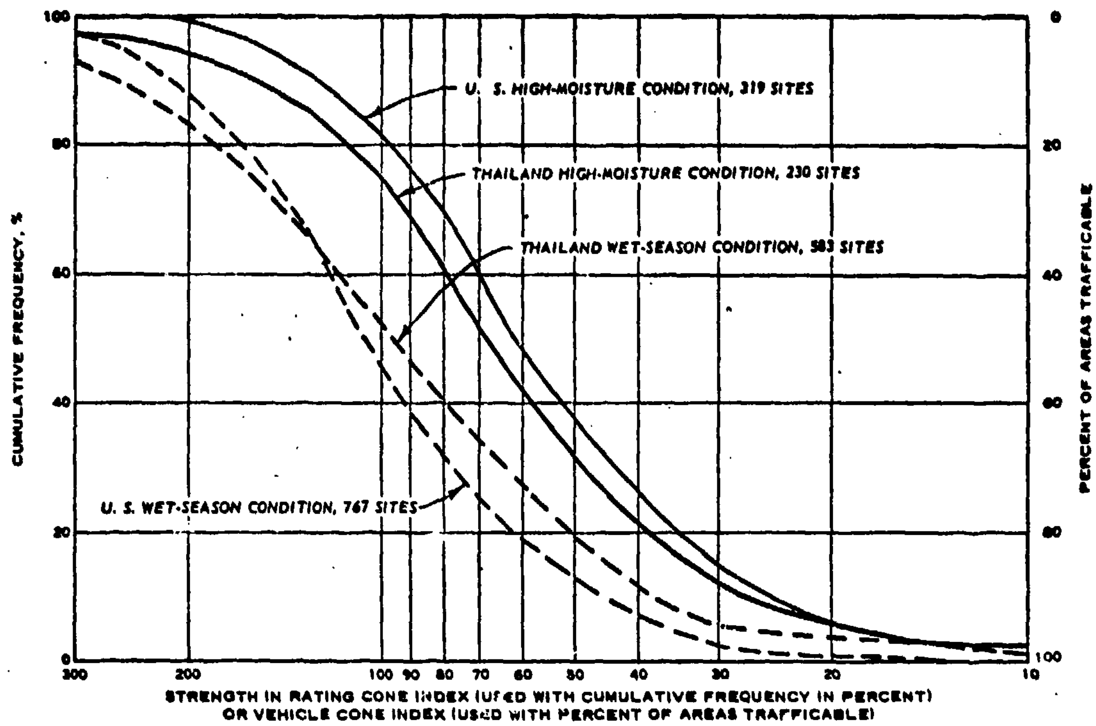


Fig. C2. Comparative performance on smooth, level, clay soil of uniform strength



NOTE: Wet-season condition is for high- and low-topography areas; high-moisture condition is for low-topography areas only.

Fig. C3. Cumulative frequency of rating cone indexes in United States and Thailand (Fine-grained soils, 6- to 12-in. layer)

The wet-season category is based on high and low topographic positions, while the high-moisture category is only for low topographic positions. Because the data in fig. C3 are biased toward wetter-than-average conditions, estimates of percentages of trafficable areas made from the curves will be smaller than actual, i.e. on the conservative side. Environments having soil strengths less than 25 RCI, such as marshes and swamps, are particularly troublesome to ground vehicles. Consequently, special vehicle configurations, such as the marginal terrain vehicle, have been built to provide some degree of mobility in these environments. Such environments are beyond the operational context intended for conventional cargo vehicles.

Table C1.

MOBILITY INDEX VS VEHICLE CONE INDEX

MI	VCI	MI	VCI	MI	VCI	MI	VCI	MI	VCI
0	3.0	31	39.2	67	55.6	103	72.0	139	88.3
0.25	5.5	32	39.7	68	56.1	104	72.4	140	88.8
0.50	7.0	33	40.1	69	56.5	105	72.9	141	89.2
0.75	8.3	34	40.6	70	57.0	106	73.3	142	89.7
1.00	9.0	35	41.0	71	57.4	107	73.8	143	90.1
1.50	10.8	36	41.5	72	57.9	108	74.2	144	90.6
2.00	12.5	37	42.0	73	58.3	109	74.7	145	91.0
2.50	13.8	38	42.4	74	58.8	110	75.1	146	91.5
3	15.1	39	42.9	75	59.2	111	75.6	147	91.9
4	17.5	40*	43.4*	76	59.7	112	76.0	148	92.4
5	19.7	41	43.8	77	60.2	113	76.5	149	92.8
6	21.5	42	44.3	78	60.6	114	77.0	150	93.3
7	23.0	43	44.7	79	61.1	115	77.4	151	93.8
8	24.2	44	45.2	80	61.5	116	77.9	152	94.2
9	25.3	45	45.6	81	62.0	117	78.3	153	94.7
10	26.4	46	46.1	82	62.4	118	78.8	154	95.1
11	27.3	47	46.5	83	62.9	119	79.2	155	95.6
12	28.1	48	47.0	84	63.3	120	79.7	156	96.0
13	28.9	49	47.4	85	63.8	121	80.1	157	96.5
14	29.6	50	47.9	86	64.2	122	80.6	158	96.9
15	30.4	51	48.4	87	64.7	123	81.0	159	97.4
16	31.0	52	48.8	88	65.2	124	81.5	160	97.8
17	31.7	53	49.3	89	65.6	125	82.0	161	98.3
18	32.3	54	49.7	90	66.1	126	82.4	162	98.7
19	32.9	55	50.2	91	66.5	127	82.8	163	99.2
20	33.5	56	50.6	92	67.0	128	83.3	164	99.6
21	34.1	57	51.1	93	67.4	129	83.8	165	100.1
22	34.6	58	51.5	94	67.9	130	84.2	166	100.6
23	35.2	59	52.0	95	68.3	131	84.7	167	101.0
24	35.8	60	52.4	96	68.8	132	85.1	168	101.5
25	36.3	61	52.9	97	69.2	133	85.6	169	101.9
26	36.8	62	53.3	98	69.7	134	86.0	170	102.4
27	37.3	63	53.8	99	70.1	135	86.5	171	102.8
28	37.8	64	54.2	100	70.6	136	86.9	172	103.3
29	38.3	65	54.7	101	71.1	137	87.4	173	103.7
30	38.7	66	55.2	102	71.5	138	87.8	174	104.2

* For MI above approximately 40, VCI obtained from equation:

$$VCI = 25.2 + 0.454 \times MI$$

Unclassified
Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

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3. REPORT TITLE
RELATIVE OFF-ROAD MOBILITY PERFORMANCE OF SIX WHEELED AND FOUR TRACKED VEHICLES IN SELECTED TERRAIN

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13. ABSTRACT The U. S. Army Engineer Waterways Experiment Station analytical model for predicting off-road ground mobility was used to evaluate the performance of six wheeled vehicles (M656, M54A2, M520, M37B1, M561, and M706) and four tracked vehicles (M548, M113A1, M116, and M571) over a selected traverse in Thailand. Maps were prepared to exhibit the terrain in terms of surface composition (soil consistency), surface geometry (slopes, rice-field dikes, etc.), vegetation, and hydrologic geometry (rivers and streams). The performance of each vehicle was evaluated in terms of average speed over the traverse and the center line, average fuel consumed over the traverse, and center-line cargo delivery rate. The vehicles were "run" over the traverse under dry-season conditions (60 or 40 rating cone index) and wet-season conditions (60 or 35 rating cone index). Four of the vehicles (M656, M54A2, M520, and M548) were tested also under wet-season conditions of 60 or 40 rating cone index. Wet-season conditions usually reduced vehicle performance. However, soil strength was not as significant as other terrain factors in evaluating the vehicles over the selected traverse because the soil strengths used were higher than the vehicle cone indexes of all the vehicles; so no vehicles were immobilized because of soft soils. No one vehicle provided optimum mobility for all the terrain conditions encountered on the traverse over which predictions were made. Further, neither wheels nor tracks appeared to consistently give better performance. The M113A1 had the highest average traverse and center-line speeds in the dry season, and the M571 had the highest speeds in the wet. The M54A2 had the lowest traverse and center-line speeds in both seasons. The M571 consumed less fuel on the average in the dry season, and the M561 and M571
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13. Abstract (cont'd) consumed the least in the wet. The M548 consumed the most in the dry season and the 60 or 40 rating cone index wet season; the M520 the most in the 60 or 35 rating cone index wet season. The M520 had the highest delivery rate in both seasons and the M37B1 the lowest. A recommendation was made that the mission environment for any new vehicle be defined in quantitative terms before the new vehicle is developed. Appendix A describes the WES analytical model in an abbreviated form; Appendix B, the evaluation of the dynamic response of the M706; and Appendix C, some additional general analyses of the effects of soil strength on vehicle performance.

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